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*(See page 79)*

February, 1928
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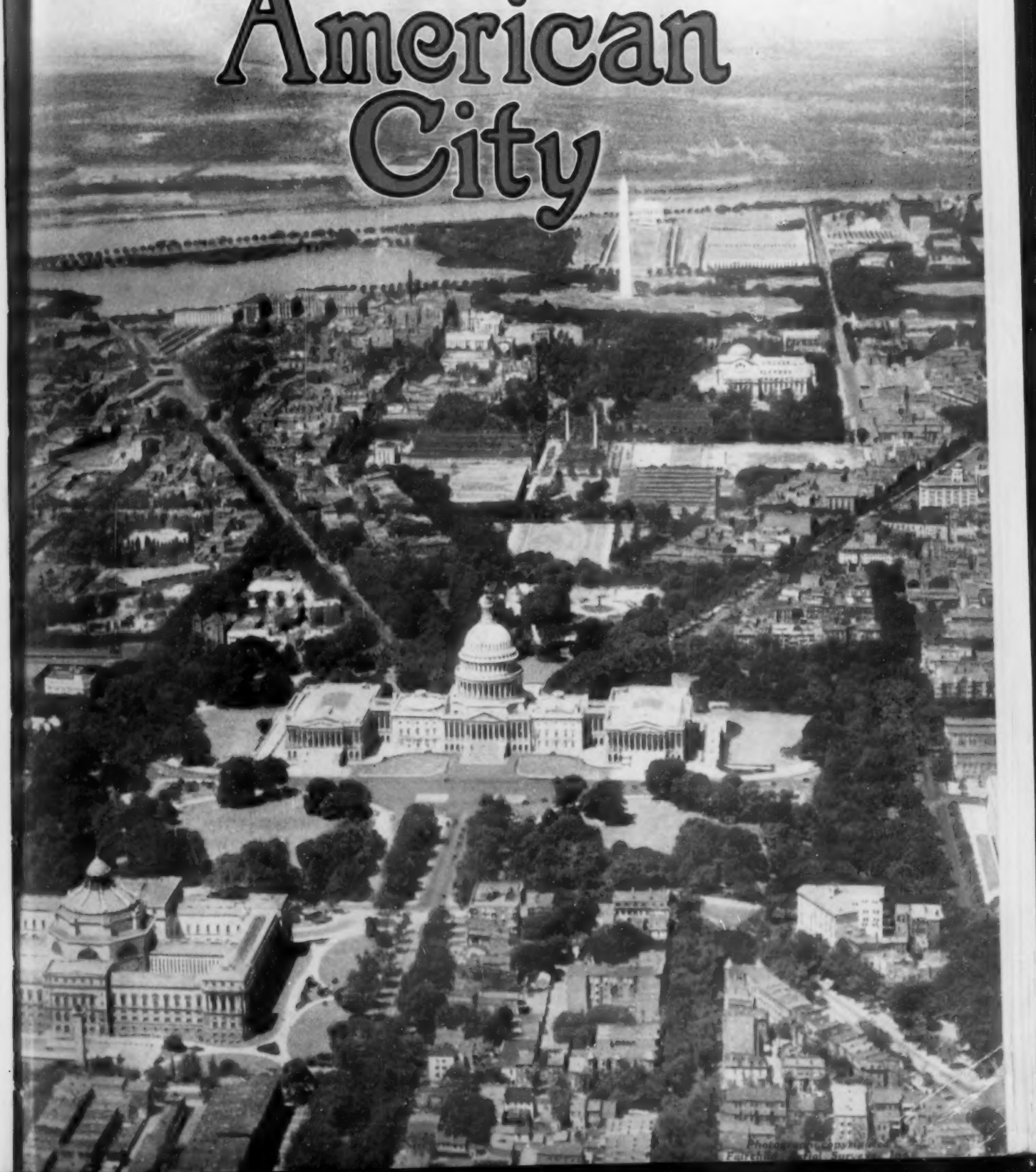

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M. V. FULLER
Associate Editors

# The American City

443 Fourth Avenue, New York

EDGAR J. BUTTENHEIM
President and Manager

TOM DIX
Vice-President

HERBERT K. SAXE
Treasurer

PRENTICE C. FORD
Advertising Manager

# INDEX TO CONTENTS

Vol. XXXVIII No. 2
FEBRUARY, 1928

**Advantages and Disadvantages of City Life** 99
**Airports: Aberdeen, S. Dak., and San Diego, Calif.** 148
**Beauty, Conservation of Natural** 90, 150
**Bigness of City** 17, 106
**Building Code Adopted Through Chamber of Commerce Efforts** 19
**City Beautification**
Motorists Warned Off Parkways 146
Home Grounds Contest, Albion, Mich. 146
National "Cleanest Town" Contest 169
**City and Regional Planning and Zoning**
Two Definitions of City Planning 17
L'Enfant's Dream of Washington Coming True 13, 79
A Suggestion to Realty Developers and City Planning Commissions 94
Plans for International Housing and Town Planning Congress 104
Examination of Arguments for Skyscrapers 124
Zoning Milwaukee County, Wisc. 143
How Intensively Must We Use the Land?—IV 149
A New Town Planned for the Motor Age 152
Preserving Balance Between Conservation and Development in Rural Sections 163
Zoning Notes 175
**Conventions** 185
**Finance**
Purchasing Supplies 5
The Municipal Bond Market 15
Cash Discounts on Bills 15
City Manager Advocates Cash Policy 138
**Fire Prevention and Control**
Fire Apparatus Suffers from Too Much Tinkering and Too Fast Driving 19
Small Cities Adopt Ordinances for Safer Roofs 19
Who's Who in Fire Fighting 21
Demonstration of Fire-Fighting Facilities 96
Egyptian Fire Fighters' Association 145
New Model Fire-Alarm Register 191
**Forward Steps** 143
**Government, Municipal**
Novel Form of Proportional Representation Charter Proposed for Milwaukee 15
An American City 115
**Governor Smith on Municipal Home Rule and Public Development of Natural Resources** 109
**Health**
Dental Work for German Children 142
Efficient Rural Health Center 154
Restaurant Inspection 155
Average Span of Life Increased 157
School Health Service Cuts Tax Rates 169
**Highways**
Road Work Solves London's Winter Unemployment Problem 7
The Maintenance of Gravel Roads 83
Study of American and European Thoroughfares—II 97
Repaving a Busy Street 102
A City Is Judged by the Condition of Its Streets 103
Cost of Fine Crushed Rock and Gravel Roads 120
Control of Street Pavement Openings—II 121
Poor Roads Are Expensive 123
Black Base Pavement, Minot, N. Dak. 129
Extensive Texas County Road Project 134
Non-Bituminous Highway Materials and Their Uses 139
New President of American Road Builders' Association 151
New Roads from Old 158
New Road Form 187
Specially Designed Grading Roller 189
General Utility Motor Grader 191
Pressure Mixer for Asphalt 191
**Housing**
A Woman's Club Program for Better Housing 104
Intensive Survey Increases Local Building Activities 110
**Jamestown, N. Y., Pays Tribute to Former Mayor** 151
**Legal Decisions**
Hot Dog Kennels as Nuisances to Adjoining Property Owners 137
Puzzling Questions of Liability 177
Sundry Problems of Municipal Law 179
**Lighting System, Oak Park, Ill.** 105
**Memorial Auditorium, Shreveport, La.** 145
**News and Illustrations** 187
**Parks and Recreation**
Central Park, New York City, to Be Rehabilitated 13
Revised Standards for Sanitation of Swimming Pools 13
How Remaining Waterfronts Might Be Saved for the People 117
Barless Enclosures for Wild Animals in Chicago Zoo 125
The Better 'Ole 133
A Pageant for Your Town 136
New Chinese Playground, San Francisco 147
New Light-Weight Power Lawn Mower 189
**Personnel Administration**
Under the City Manager 5
For State Uniformity in Municipal Civil Service Requirements 127
An Outline of Principles 171
**Police, Courts and Crime**
New Method of Sentencing Criminals Urged by Governor Smith 19
The Policeman as a Community Advertiser 93
Lakeland, Fla., Has "Popular Policemen" Contest 132
Judge Lindsey and "The House of Human Welfare" 159
**Population Estimates for Cities of Over 30,000** 165
**Portraits** 11, 21, 151
**Publications** 181
**Roadside Trees and Public Utilities on Highway Rights-of-Way** 158
**Sewers and Sewage Disposal**
65 Per Cent of Sewage Treated 9
Sprinkling Filter Planned for Expansion 107
87 Years Old, and Head of a Sewer Department 151
**Snow Removal**
Snow Removal at Night 7
Snow Removal in Philadelphia—II 111
Snow Loader with New Gathering Device 193
Special Snow Scoop 193
**Street Naming and House Numbering, Queens Borough, New York City** 91
**Traffic**
Committee Report on Street Signs, Signals and Markings Nearing Completion 19
Shall We Abolish Sleep? 82
Kansas City Drivers Sign Accident Prevention Pledge 128
Protest Against Advertisements of High-Speed Automobiles 154
Needless Irritants to Traffic 161
How Many Shoppers Park Autos in Streets? 163
Moral Same in Any Language 167
Automobile Fatalities Indicate Importance of Uniform Vehicle Code 169
Traffic Control by Reflectors 187
New Electric Traffic-Control Signal 189
**Trolleys Heading Toward Graduated Fares with Ten Cents Base** 131
**Unemployment Helped by Public Works Appropriation** 5
**Waste Disposal**
Over $13,000 for Garbage Grease 7
German Developments in Refuse Disposal 87
**Water-Supply and Water-Works**
Schenectady's Water Bureau Report 9
Who's Who in Water-Supply 11
Cross-Connections Again Responsible for Typhoid 89
The Cost of Water Analyses 95
The Relation of Turbidity to Coagulant Dosage 100
Five Years' Operation of a Rapid Sand Filtration Plant—II 119
The Anti-Pollution Campaign in Texas 126
Electric Pumping System Adopted by Buenos Aires 127
Can Filters Be Satisfactorily Operated at Variable Rates? 128
Side-Hill Construction by Tacoma Department 130
Meter Repair Practice in Rochester, N. Y. 133

*For* INDEX *to* ADVERTISEMENTS
*See page* 246

The offices of THE AMERICAN CITY are headquarters for information on equipment for municipal work. If you want catalogs, prices or names of manufacturers, let us help you.

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### *A New Town Worth Watching*

ENCOURAGED by its remarkable success in providing well-planned homes for low-income families at Sunnyside in the borough of Queens, the City Housing Corporation of New York announces an even more interesting project in New Jersey. In this new development, on a thousand-acre tract between Paterson and Hackensack, a demonstration is to be made of the planning and building of a new town, designed as no other community has been to meet the opportunities and problems of the motor age, and financed on a 6 per cent limited-dividend basis. The preliminary plans of this notable project are illustrated and described on pages 152 to 154 of this issue

### *A Special Reason for Going Abroad This Summer*

DURING the two weeks beginning July 2, Paris will be the scene of a group of international meetings of great interest to municipal officials, city planners and executives of civic and social welfare organizations. Of special importance to readers of THE AMERICAN CITY will be the meeting of the International Federation for Housing and Town Planning, the program of which is announced on page 104 of this issue. A housing and town planning exhibition, to be held during the "International Social Welfare Fortnight," and opportunities to visit points of municipal and city planning interest in Paris and vicinity, give added reason for a large attendance of Americans.

It is suggested that persons in the United States and Canada desiring additional information may save time by communicating with the Editor of THE AMERICAN CITY, who has been asked to serve as chairman of the American committee.

### *Public Works Appropriation Helps Relieve Unemployment*

RICHMOND, VA.—About December 1, 1927, the city of Richmond completed a very extensive program of street paving. Under ordinary conditions the public improvement appropriations for 1928 would not be available until April. It so happens, however, that there is much unemployment in the city this winter, but industrial activity in Richmond and adjacent territory seems likely to be so great this spring that there will be a shortage of labor at that time. Therefore, in order to advance our improvement work and get some of it out of the way this winter, and at the same time assist in relieving the labor situation, the City Council has made an appropriation of $100,000 to perform such work as can be economically executed during the winter months. We have practically decided on what streets will be improved during the year 1928 and the advance appropriation of $100,000 will be as follows: $25,000 for installation of gas and water utilities in the above streets; $25,000 for miscellaneous sewer extensions, and $50,000 for grading such streets in our general program in the outlying sections where the traffic and public will be least inconvenienced. This advances our program, employs contractors' organizations which are now idle, and gives work to approximately from 150 to 200 men. Under the circumstances we believe that our unit cost will be low and that it is a good investment.

R. KEITH COMPTON,
Director of Public Works.

## Items and Abstracts for MAYORS AND CITY MANAGERS

### *Is Your Municipality Purchasing Its Supplies in Such a Way as to Obtain the Highest Quality, the Correct Quantity and the Lowest Prices?*

THIS question is asked by the New York State Bureau of Municipal Information in its Bulletin of December 31, 1927. Centralized purchasing is given as the answer:

"The plan of permitting all departments, bureaus and officials to make their own purchases or of having committees of the legislative body buy materials does not permit purchasing in bulk, attract healthy competition, allow standardization of supplies, or control effectively the inspection of goods and the issuance of purchase orders. It permits many small leaks, the total of which is large at the end of the year.

"Ten or fifteen years ago, patronage in the form of purchase of supplies was regarded as a political asset. It is now regarded as a political liability.

"Municipal experts agree that, when properly manned and operated, central purchasing is a most efficient system.

"For these reasons many cities and villages have made a single bureau or official responsible for the buying of all supplies which by law may be purchased in the open market. These municipalities have either created a central purchasing bureau or agency or have empowered some official of the municipality to make all open market purchases."

### *Personnel Administration Under the City Manager*

ANOTHER problem is rising before us that calls for close attention by all who are interested in the merit system.

The increasing complexities of city government and the waste and inefficiency of divided authority are driving the cities to adopt the typical American corporation organization—an elected board of directors to determine policies and choose an executive to manage the business. This form of organization is showing such efficiency that it has been adopted by over 400 small cities, and even by such large cities as Cleveland and Cincinnati, and seems likely to be adopted generally throughout the country.

Unfortunately it happens that many advocates of the plan have carried their theory to such an extreme that they would have the City Manager "hire and fire" all officers and employees. While the Civil Service Commission is usually accepted as the employment department to furnish qualified persons to perform service, there is a sentiment visible that the Civil Service Commission itself should hold office only at the will of the City Manager.

While we may share the admiration that has been expressed for the high standard of city manager administration, it is inevitable that those most intimately connected with civil service administration should feel alarmed as they visualize a very different possibility. We know with some vividness the ruthless appetite for a job shown by a politician who has a cousin who has to be taken care of; and once he is in possession of a job, the man who succeeds in taking it away should find it a simple feat to tear a piece of meat from a hungry tiger.

Those whose recollection, or whose study of political history, goes back beyond the establishment of the merit system, will have no difficulty in imagining what would happen if a strong and able politician of the type of the old-time city boss should arise in a city where the Civil Service Commission is wholly in the power of the executive. When he elected a city Council, with power to hire and fire a City Manager, who in turn would have power to hire and fire the Civil Service Commission and all other appointees, the new boss would achieve a completeness of control beyond the dreams of the old-time boss.

It is one of our duties, therefore, to place before the advocates of the city manager system the fundamental importance of safeguarding the system so that the positions under the city government shall not be filled by politicians as the reward of political service. If that is not done, municipal governments are due for a stormy time in future years. We of the Civil Service Commissions know that greed for the spoils of office is not dead, and that opportunity will inevitably lead to governmental disaster.

—From the Report of the President of the 1927 Assembly of Civil Service Commissions, as published in the Proceedings of the Twentieth Annual Meeting.

### *Costly Football Coaches and Poorly Paid Municipal Hacks*

A CONVERSATION overheard in a Pullman smoker between an English visitor and an American business man in which certain foolish economies in municipal salaries and other city problems were discussed, is reported by the former Engineer-Commissioner of the District of Columbia on page 115-116 of this issue. Col. Bell's English friend believes that able leadership and team work are fully as important to the American people in municipal affairs as on the football field.

# 400% INCREASE IN 5 YEARS

In the building of Snow Plows for Motor Trucks the **GOOD ROADS MACHINERY COMPANY** has established an enviable reputation since the first motor truck plow was made in 1913 by this Company. The demand **for Champion Plows** has been steadily increasing, until in the year 1922 approximately three hundred seventy-five plows were sold throughout the states. In the year 1922 up to the present time there has been a steady **increase** in the sale of "Champion" Snow Plows of approximately **400%**, which clearly denotes the priority that these plows have over any, and all other, makes.

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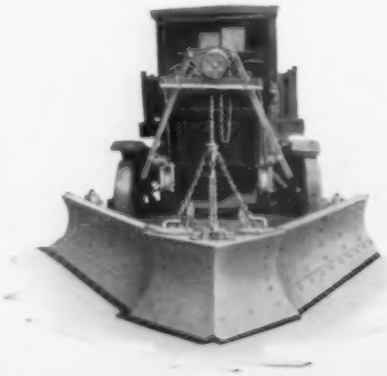

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## Items and Abstracts for ENGINEERING AND HIGHWAY DEPARTMENTS

### *Gravel Roads Are Most Abundant*

THE greater part of surfaced roads in the United States and Canada are of gravel construction and probably always will be so. Where traffic warrants, that is, where it reaches a point greater than 5,000 cars per day, some more permanent type of surfacing is necessary. Gravel roads need a great deal of care to keep the surfaces even and to prevent the formation of ruts or corrugations. R. W. McColough, of the Department of Highways of Nova Scotia, and A. L. Burridge, Division Engineer, Michigan State Highways Department, discuss in this issue the maintenance of gravel roads, including types of materials best suited for construction and maintenance, the best types of equipment, and the use of calcium chloride, oils and asphaltic material for preserving the surface and preventing attrition by the removal of the finer material in the form of dust. A great deal of very helpful information is included in this article, which has been prepared from the papers presented by these two men before the Canadian Good Roads Association. County and town engineers, and village engineers who have gravel roads under their jurisdiction, will glean much from a careful study of the materials, methods, equipment and costs discussed

### *County Spends* $70,000,000 *on Roads*

WHEN a county enthusiastically votes a $70,000,000 bond issue for roads, it means business. How the first four sections of the initial road project were built and enthusiastically received by the people of Harris County, Texas, in which Houston is located, is told in considerable detail by A. J. Wise, County Engineer, in his interesting illustrated article in this issue. The article gives data on design, costs, bonuses for speedy construction, and describes the cooperation of business houses in the various towns with the county to provide a concrete road from Houston to LaPorte on the bay shore.

### *Refuse Incineration in Germany*

THE Alter Teichweg refuse incinerator in Hamburg, Germany, was visited by all American engineers interested in refuse disposal prior to 1914. This plant was said to be a model of efficiency and cleanliness. With the latter we can concur from a hasty personal inspection. Refuse incineration in Germany is more difficult in one way than in the United States. The use of peat as a fuel reduces the calorific value of the material to be burned as compared with American refuse, but the German does not have to contend with the high water content of American refuse. This is particularly heartrending to American operators in August and September when corn-husks and watermelons literally drown out the fires. In this issue of THE AMERICAN CITY is a translation of some recent German literature describing advances in methods of loading the furnaces, the discharge of clinker and the use of by-products.

### *Black Base Paving on Petition*

MINOT, N. Dak., does all paving under the special assessment laws of the state, which require that not more than one-fifth of the total cost be paid by general taxation on all the property of the city, the other four-fifths being assessed against abutting property within the paving district. In his article in this issue of THE AMERICAN CITY, William W. Peterson, City Engineer of Minot, tells of the tangled condition of affairs when proponents of rival types of pavements are securing the names of property owners for their petitions. It is interesting to note that black base was requested by one hundred per cent of the petitioners in the beginning of the present paving program. The coarse aggregate is secured from the gravel-pits owned by the city, and Lake asphalt is used throughout.

### *Roads from the Ground Up*

TO adequately describe the non-bituminous materials entering into all types of road construction in a single paper, is a real job. A. T. Golbeck, formerly of the U. S. Bureau of Public Roads and at present Director of the Bureau of Engineering of the National Crushed Stone Association, has prepared a paper which appears in this and the next issue of THE AMERICAN CITY, containing more valuable information than is usually found in a single discussion. Mr. Goldbeck starts with the earth road, discussing subsoils, plastic clays, granular materials, and field tests for soil, and then devotes considerable space to the top-soil, sand-clay and semi-gravel roads. Traffic-bound construction is another topic, followed by an analysis of macadam and gravel construction, and specifications for gravel, and then surface treatment for waterbound macadam. There is a discussion of the aggregates used in bituminous macadam built by the double penetration and triple penetration methods. Mixed macadam construction is also discussed, followed by specifications for bituminous concrete construction as related to the aggregate and filler. Cold mix bituminous concrete and portland cement concrete, with a discussion of pit-run gravel as aggregate, as well as fine aggregate and coarse aggregate, and slag aggregate, are discussed in detail. This paper of itself is a veritable textbook on paving construction.

### *"Regional Consciousness" and Public Improvements*

NEWSPAPERS have now begun to speak of a "regional consciousness," as applied to the Philadelphia Tri-State District. There is a growing disposition to consider public improvements, such as highways, parks, sewerage, and water-supplies, not as independent local problems, but as interdependent projects.

"It is encouraging to learn," says the *Inquirer*, "that a survey by the Regional Planning Federation indicates that the metropolitan district is becoming 'regionally conscious' and is not content that small communities, built haphazard and without relation to each other, should bar the way to a wisely planned and integrated metropolis."

### *Snow Removal at Night*

CITY MANAGER P. T. MITCHELL of Petoskey, Mich., has requested motorists of that city to move their cars off the city streets after midnight so that the city's motor snow-plow can clear the entire width of the downtown section. Heretofore, cars left in the streets have hampered the snow-removal work by the city forces.

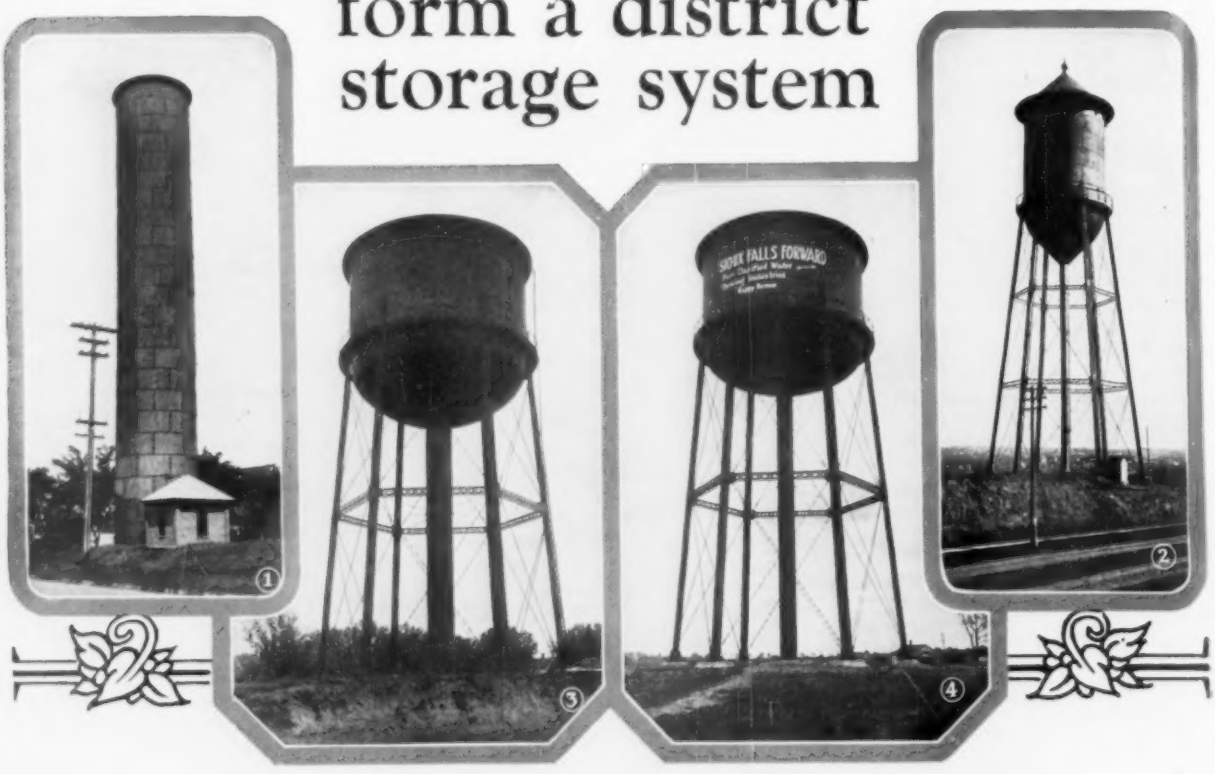
### *Over* $13,000 *for Garbage Grease*

ON A contract basis, the receipts from the crude grease produced through the reduction of garbage in Schenectady, N. Y., in the year ending December 1, 1927, totaled $13,453.60, according to the annual report of Thomas H. Welch, Superintendent of the Bureau of Garbage Reduction. Seven thousand tons of green garbage were received at the loading platform of the plant, and from this 336,340 pounds of crude grease were extracted. The grease brought 4 cents a pound, contract price, and was sold to the A. A. Gross Co., of Newark, N. J. The bulk of tankage was disposed of to F. W. Tunnell Co., of Philadelphia. The local market for tankage took 50 tons.

### *Road Work Solves London's Winter Unemployment Problem*

ACCORDING to the *Municipal Journal and Public Works Engineer*, London, England, among the perennial problems which occur with the approach of winter, unemployment is not the least pressing. For the last six years, grants from the Road Fund have been a fruitful, though a diminishing, source of aid. Local authorities confronted with the problem of finding work for the able-bodied men under conditions not strictly economic but nevertheless of more social advantage than recourse to the Poor Law, found in the Road Fund a means to supplement the draft on rates. Now, by the reports that come from all parts of England, the conditions governing the issue of grants from the Fund tend to be more onerous. Wiltshire, for example, with 700 miles of roads, finds that the grant of 50 per cent toward maintenance imposes a recurring cost of excessive weight upon the ratepayers of a county in which population is relatively sparse.

# Horton Tanks installed as needed form a district storage system




THE experience of Sioux Falls, South Dakota, offers a number of valuable suggestions for handling the water supply of a growing city.

In 1904 the old standpipe pictured was adequate. By 1907 additional storage was needed and a Horton elevated tank, shown at the right, was installed. This tank was of the type common at that period. In 1916 and again in 1926, additional Horton Tanks were built as shown in the two central pictures, in each case advantage being taken of latest improvements in design. The ellipsoidal-bottom type used for these last two tanks has a minimum difference in head between upper and lower water levels, resulting in a minimum pressure variation and a reduction in the average head against which the pumps must work to fill the tank.

By locating these tanks in different sections of the city as the need arose, a district storage system has been developed. All sections are now served with uniform pressure regardless of consumption or pumping rates, and a large quantity of water is provided at all times for emergency. Total storage in this city of 35,000 population is 1,156,000 gallons.

The repeated installation of Horton Tanks by this city is a convincing demonstration of the satisfaction experienced with these elevated tanks. Our nearest office will gladly furnish complete data on Horton Tanks for any studies you may want to make.

## CHICAGO BRIDGE & IRON WORKS

*Chicago*.....2127 Old Colony Bldg.
*New York* 3108 Hudson Terminal Bldg.
*Cleveland*.....2236 Union Trust Bldg.
*Dallas*..1606 Dallas Nat. Bank Bldg.
*Atlanta*.....1014 Healey Bldg.
*San Francisco*.....1033 Rialto Bldg.

# HORTON TANKS

AC2-Gray

Yes—we should like you to mention THE AMERICAN CITY.

### 65 Per Cent of Sewage Treated

ENLARGEMENT of the sewage disposal plant of Schenectady, N. Y., to accommodate all of the city's sewage, instead of only 65 per cent, which is now treated, was the principal recommendation of Morris M. Cohn, Superintendent of the Bureau, in his report for 1927. The installation of a by-pass and overflow chamber were also recommended. The report shows that the total sewage pumped was 1,671,700,000 gallons, or a daily average of 4,600,000, slightly lower than in 1926.

### *Sprinkling Filters for a Growing Town*

WATERTOWN, a suburb of Waterbury, Conn., has been growing rapidly in recent years. It has lacked proper sewerage facilities until recently, when a trunk sewer was constructed leading to a new disposal plant consisting of grit chamber, Imhoff tank and sprinkling filters. The plant is so constructed that it may readily be added to as the growth of the community demands. With the exception of a very small covered filter which was built by one of the state institutions in 1912, this is the first sprinkling filter installation in Connecticut. It is described in an article in this issue of THE AMERICAN CITY, prepared by Henry R. Buck, consulting engineer, Hartford, Conn., who designed the plant.

### *Coagulation Versus Turbidity*

MANY water-works operators have lost sleep over the vagaries of turbidity and alum dosage. Many have had the experience of increasing the alum dosage, with increasing turbidity, only to find that the coagulation ceased to prove effective. Tests frequently show, however, that a reducing in the coagulant dose as turbidity increases solves the problem. In Omaha, Nebr., extensive settling tests of the raw water have demonstrated that under most conditions the result of three hours' settling in a 5½-foot glass cylinder is the best criterion. The article by Kenneth C. Armstrong, Chemist of the Florence Filtration Plant, of the Omaha Water-Works, analyzes the conditions, outlines the plan of investigation, and summarizes the results.

### *Schenectady's Water Bureau Report*

NEARLY 6 miles of water-mains were laid in the fiscal year ending November 1, 1927, according to the report of Emmett Blessing, Superintendent of the Schenectady, N. Y., Water Bureau. The per capita daily consumption of water was 139.19 gallons, and more than 5 billion gallons of water were pumped during the year. The report also shows that about 75 acres of land adjoining the pumping-station in Rotterdam were purchased during the year to protect the water-supply from pollution. The revenues during the year amounted to $240,425.46, and the balance of the water-meter bills collectible during the month and the amount unpaid from the May bills make the total $255,277.69. The budget appropriation was $233,467.45, leaving a balance of $21,810.24. The water-mains installed during the year included 2,535 feet of 12-inch main, 3,766 feet of 8-inch main, and 23,541 feet of 6-inch main. Eighty-two hydrants were also installed. The average daily pumpage, 14,247,687 gallons, was the lowest since 1919. There are now approximately 151.6 miles of mains and hydrant branches in use in Schenectady. The size of the mains runs from 4 to 36 inches in diameter. There are 2,075 hydrants and 3,747 sections and hydrant gates. There are 19,120 services within the city limits, and 1,007 outside the city. Only 5.6 per cent of the services are metered. The total bonded indebtedness of the Water Bureau, as of December 3, 1927, is $760,000.

## Items and Abstracts on WATER AND SEWERAGE

### 64-*Inch Steel Pipe on a Hillside*

A SPECIAL traveler with hand winches at each end, for use in setting 64-inch diameter steel pipe on side-hill construction, has been developed by the Water Department of Tacoma, Wash., and is described in this issue by W. A. Kunigk, Superintendent, Water Division. It was found possible to control every movement of the pipe with this traveler speedily and safely.

### *Meter Repair Costs*

METER repair costs may vary all the way from 12 cents per meter per year to 50 cents per meter per year, depending upon whether a city permits considerable latitude in accuracy on test. Rochester, N. Y., whose meter practice is described in this issue, permits not more than 2 per cent variation from 100 per cent registration and puts practically all meters through a cleaning and test, no matter for what causes they may be removed from the service. The costs in Rochester are 50 cents per meter per year, but it is believed that the increased revenue from accurate registration more than makes up for the discrepancy between 50 cents and 12 cents in a city where a variation of 10 per cent is permissible.

### $1,200 *for an Analysis*

IT sounds like a lot to pay $1,200 for an analysis, but when a city official requests that "the sample be examined to find out just exactly what bacteria are in the water" and backs up the request with a letter from the Mayor stating that it is a responsible request, they may expect such a bill. It is an expensive proposition to hire a graduate bacteriologist and to spend the time to identify an imposing number of bacteriological organisms. An official may question whether the analysis is worth the price. It undoubtedly is not, because the information given is far beyond the requirements to determine the potability of the water. When there is doubt regarding the quality of water, it is best to request the laboratory to take the sample, make an inspection and furnish a report. In this way trained men who know the economic limits of investigations can obtain the sample and give the information really needed. Prof. J. J. Hinman's article, "The Cost of Water Analyses," discusses this subject in an interesting manner.

### *U. S. Equipment for S. A. Water-Works*

BUENOS AIRES, the Queen City of South America, as it is termed by travelers and engineers and not simply by its Chamber of Commerce, has adopted American equipment for the electrification of its water-works. Electric motors and pumps have been chosen to replace the steam-operated units which raised the water from the river to the settling-basin and then pumped the filtered water to the city mains. It is also interesting to note that Buenos Aires is having its trouble with increased per capita consumption. Records of the water department show that in 1890 the average daily consumption was 125 liters, while in 1925 the average daily consumption was 327 liters per capita, an increase of 162 per cent over the first figure.

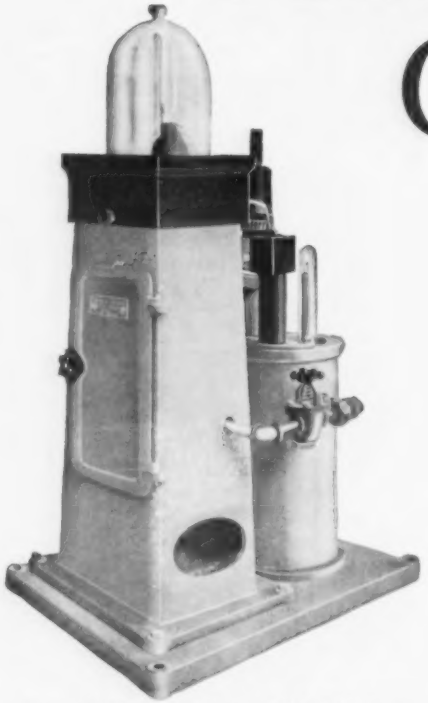
### *What is the Effect of Overloading Filters?*

AN interesting study of the effect of the operation of filters at variable rates appears in this issue of THE AMERICAN CITY. Prof. Harry N. Jenks, of the Department of Sanitary Engineering, Iowa State College, gives the results of a series of tests which he ran. It is interesting to note that, providing over-load rates are kept within proper limits, the operation of filters at variable rates has of itself no injurious effect on the quality of the effluent as compared with operation at a constant rate. Filter runs are shortened to a much greater extent by the duration of overload rates of a filtration than by the amount of the overload. On the side of economies in construction, it is found that by varying the rate of filtration to correspond to the curve of water consumption, it may be possible, under favorable conditions to reduce the size of storage reservoirs or elevated tanks to an extent otherwise inadvisable.

### *Regional Plans for Sewage Disposal*

A TEN-YEAR sewage disposal project for Camden, N. J., includes the construction of five units and a complete revision of the city's sewerage system. A new disposal plant will serve North Camden, East Camden, and Merchantville Terrace, Pensauken, and Delaware Garden in Pensauken Township. The Regional Planning Federation of the Philadelphia Tri-State District calls attention to the fact that one of the most desirable features of this proposed plan for sewage disposal, now awaiting approval by the New Jersey State Board of Health, is the manner in which it ignores boundary lines in the interest of economy and efficiency of result.

# Automatic Chlorination



Automatic Vacuum Solution Feed Chlorinator
Type ASV

THE automatic application of liquid chlorine for water sterilization or sewage disinfection is desirable wherever there are rapid changes in the rates of flow or wide variations between maximum and minimum flows.

By eliminating the necessity of over chlorinating the low flows in order properly to chlorinate the high flows—as is frequently necessary with manually operated apparatus—the efficiency of the treatment is increased and interesting savings in chlorine result.

W&T Automatic Chlorinators are available to meet most water supply requirements.

*Write for Technical Sheet No. 76*

**Efficiency Tests**

on two of these units at the NEW HAVEN WATER COMPANY show an average accuracy of 99.5%.

*"The only safe water is a sterilized water"*

WALLACE & TIERNAN
COMPANY, INCORPORATED
*Manufacturers of Chlorine Control Apparatus*
NEWARK - NEW JERSEY

NEW YORK CHICAGO KNOXVILLE SAN FRANCISCO MINNEAPOLIS PITTSBURGH DALLAS KANSAS CITY
LOS ANGELES SEATTLE ST. LOUIS BUFFALO HARRISBURGH INDIANAPOLIS DETROIT
WALLACE & TIERNAN, LTD., TORONTO, CANADA WALLACE & TIERNAN, LTD., LONDON, ENGLAND

8A6


ALSO SEE OUR ADVERTISEMENT PAGE 18

HOWELL WRIGHT
Director of Public Utilities, Cleveland
(Appointed 1923)

L. B. OHLIGER
Superintendent of Water Works, Canton
(Appointed 1887)

C. E. INMAN
Commissioner-Superintendent of Water Works, Warren
(Appointed 1920)

LOUIS F. COOK
Superintendent, Water Department, Cuyahoga Falls
(Appointed 1910)

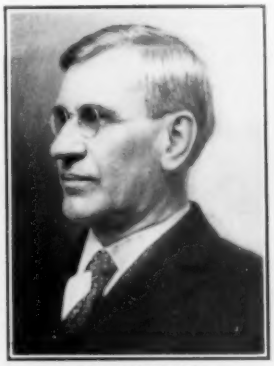
J. N. CARTER
Superintendent of Water Works, Steubenville
(Appointed 1923)

# WHO'S WHO IN WATER SUPPLY

*Installment No. 2—Portraits of Water-Works Officials in Fourteen Cities of Ohio*

J. WILLIAM LORD
Superintendent of Water Works, Fostoria
(Appointed 1914)

BERT HOLLOWAY
Superintendent of Water and Light, Niles
(Appointed 1903)



LEE HARVEY
Superintendent of Water Works, Conneaut
(Appointed 1900)

FRANK S. TAYLOR
Superintendent-Chemist, Municipal Water Works, Defiance
(Appointed 1927)

CHARLES M. ADAMS
Service and Safety Director, Wooster
(Appointed 1925)

GEORGE L. SMITH
Service and Safety Director, Troy
(Appointed 1922)

I. M. HOOVER
Superintendent of Water Works, Montpelier
(Appointed 1919)

FRANK M. DORLAND
Superintendent of Water Works, Berea
(Appointed 1899)

CHARLES D. SPRAGUE
Superintendent, Water Department, South Charleston
(Appointed 1923)

*in* { a large park / a large school / a large residence / a large tenement / a large home / a large camp / a large city } *or a small one*

Any place-large or small-
where people gather or live-

PLAYGROUND **EverWear** APPARATUS
(STANDARD SIZE AND STANDARD FOR QUALITY SINCE 1907)
&
PLAYGROUND **EverWear Junior** APPARATUS
(SMALL IN SIZE. A NEW 1928 LINE OF EVERWEAR EQUIPMENT)

Write for Catalog No. 20 or No. 20-A, the latter for "Junior" outfits

The Everwear Manufacturing Co.
SPRINGFIELD OHIO

Mention THE AMERICAN CITY—it helps.

## Items and Abstracts for PARK AND PLAYGROUND DEPARTMENTS

### *A Playground the First Essential of a Modern School*

"I . . . know that children learn more by playing freely than they do by studying under pressure. So when I build the school that I want, I shall start with the playground. I believe that clear ideas come only when they are borne along by hands and feet and ears and eyes and noses and voices. I believe that the more action a child gets into his day the better educated child he is that day."

—Angelo Patri.

### *A Policy for Saving What Remains of Our Devastated Outdoor Beauty*

THE classic Irish-ism of "foresight behind" has been exemplified by commercial interests along the coast of Southern California during recent years. Millions have been spent in advertising the beauty of the waterfronts, but by the time the tourist hordes and prospective permanent residents appealed to by the publicity began arriving in greatest numbers, land had been so aggressively "developed" that,—in some localities at least,—there were only peepholes to the sea—with a price placed upon the privilege of looking. A policy for saving the still unspoiled—and in many ways—unexcelled scenic attractiveness of the section, is outlined by Tam Deering (see page 117) who, drawing upon an adequate knowledge of the subject has in effect made of the outline a general policy for future waterfront conservation everywhere. An interesting complement to Mr. Deering's contribution appears in Walter Prichard Eaton's spirited appeal (page 90) to his fellow New Englanders to help him save the remaining original charm of New England from the boosters and what they bring.

### *Congress Appropriates* $25,000,000 *Towards Realizing the L'Enfant Plan*

WASHINGTON enters the new year with high hopes of becoming more distinguished than ever among the most beautiful cities of the world. Aided by Congressional recognition of the L'Enfant plan, the city is reaching into the future majestically, fulfilling in its second century the plan of the genius that outlined it ere it scarce had a name and a habitation. On the cover of this issue is shown an airplane view of Washington—particularly the section between the Capitol and the Washington Monument, the development of which will make the L'Enfant plan increasingly a reality. The opening article explains the breadth and distinction of the contemplated work and its connection with suburban development in Maryland.

Readers desiring additional information regarding the planning and development of the National Capital and its environs will find in the 1928 proceedings of the National Conference on City Planning a series of papers including: "The Development of the Plan of the City of Washington," by Lieut. Col. U. S. Grant, 3rd, Executive Officer of the National Capital Park and Planning Commission; "Bringing the L'Enfant Plan Up to Date," by Charles W. Eliot, 2nd, city planner; "The Nation's Interest in the Nation's Capital," by Frederic A. Delano, President, American Civic Association; "The Part of the Municipal Authorities," by Lieut. Col. J. Franklin Bell; "The Government Buildings Group," by Edward H. Bennett, consulting architect to the Secretary of the Treasury; and "The Aesthetic Value of City Planning in the National Capital." by Milton B. Medary, Jr., President, American Institute of Architects. An illustrated article by Charles W. Eliot, 2nd, on "Planning Washington and Its Environs," published in *City Planning* for July, 1927, is obtainable in reprint form from the American Civic Association, Washington, D. C.

### *Central Park, New York City, to Be Rehabilitated at a Cost of* $871,420

THE Board of Estimate of New York City, voted, on January 26, an appropriation of $871,420 for the long urgently-needed rehabilitation of Central Park. The appropriation followed a survey and certain specific recommendations made last spring by Hermann Merkel, general superintendent of the Westchester County Park Commission, for saving and improving the park as a peoples' playground.

Following Mr. Merkel's suggested apportionment of the fund, the largest items will be expended upon an elaborate irrigation system, the planting of new shrubs and trees and the proper care of already existing planting, and upon the creation of miles of new walks.

"If the park is to be restored as an oasis of quiet beauty," Mr. Merkel's report says, "it will be necessary to take certain measures to restrain the public from habits which have been formed gradually and to withdraw from public encroachment certain areas for all time and others for such time as may be necessary in order to refit them for public use." He urged the appointment of a corps of special park police to prevent permanently the spoliation of the park's shrubs and flowers, and to stop the wanton strewing about of newspapers and other rubbish.

At this meeting a city-owned site was dedicated for the proposed Museum of New York City, conditionally, James Speyer and other leaders of the movement having undertaken to raise a two-million dollar museum subscription fund by June 1.

### *Revised Standards for Sanitation of Swimming Pools*

THE Joint Committee on Bathing Places of the American Public Health Association and of the Conference of State Sanitary Engineers has submitted its final report on the Standards for Design, Construction, Equipment and Operation of Swimming Pools and Other Bathing Places, the full preliminary text of which was published in The Municipal Index for 1927 (pages 476-483). The changes recommended by the committee relate to methods of sterilization and to the computation of safe bathing loads. The proposed changes will be published in full in the *American Journal of Public Health* for February, 1928, and in the 1928 edition of The Municipal Index.

In the new wording for Section XVIII, E, the committee discusses the use of ultra-violet rays for sterilization and concludes:

"Until reliable evidence is produced that ultra-violet treatment will cause the pool water to contain a sufficient residual disinfectant to take care of casual contamination and until methods have been devised by which any such residual disinfecting action can be readily determined and controlled, the committee cannot recommend the use of violet-ray apparatus *alone* for disinfection of any pool where the bathing load is high or where large temporary loads are likely to occur."

Other changes of standards relating to sterilization recommended by the committee are:

"Section XXIV, A.—Change minimum excess chlorine required from 0.1 p. p. m. to 0.2 p. p. m., making section read as follows: 'Whenever chlorine, calcium hypochlorite or other chlorine compounds are used for swimming-pool disinfection, the amount of available or excess chlorine in the water at all times when the pool is in use shall not be less than 0.2 p. p. m. or more than 0.5 p. p. m.'

"Section XXV.—Add a new paragraph to read as follows: 'D. All chemical and bacterial analyses should be made in accordance with the procedures recommended in the "Standard Methods of Water Analysis" of the A. P. H. A. insofar as those methods are applicable to swimming-pool waters.'

"Section XXVII, B.—Reword this section to read as follows: 'At any pool where the addition of disinfectant is not continuous during the bathing period, the total number of persons permitted to use the pool between any two consecutive disinfections shall not exceed 7 persons for each 1,000 gallons of water in the pool, and each disinfection shall be sufficient to insure that the bacterial quality of the water shall conform to the limits stated in Section XXV of these standards.'"

An appendix to the report will also be published both in the *American Journal of Public Health* and the 1928 Municipal Index. It gives five illustrations of methods of computing, in accordance with the requirements in Chapters VI and XXVII, the number of bathers who may safely be permitted to use a pool at one time, and the permissible maximum bathing load limits in relation to water replacement and disinfection.

# "Voting Machines Have Come to Stay"

*"There is little doubt that voting machines have come to stay"*

THUS the New York Times editorially summed up its approval of voting machines following their use in the last election at 1860 polling places in Greater New York. All the voters in Manhattan and Brooklyn—nearly 750,000 of them—cast their ballots by machine. Next November every precinct in all New York City will be voting-machine equipped.

All over the United States cities, towns and rural voting units are turning to the modern mechanical ballot because of its simplicity, speed, accuracy, economy and protection against fraud. They are used today in 1,800 communities—from coast to coast.

Your community can install voting machines and save enough out of election costs to pay for them in a few years.

**AUTOMATIC REGISTERING MACHINE CO., Inc.**

**JAMESTOWN NEW YORK**

*SEND TODAY FOR ILLUSTRATED, DESCRIPTIVE PAMPHLETS*

### *Is Your Municipality Taking Cash Discounts on Bills Paid Within a Specified Time?*

IN a recent bulletin the New York State Bureau of Municipal Information emphasizes the economies which can be effected by municipalities, both large and small, in taking cash discounts for prompt payment for purchases of equipment and supplies.

Three reasons are mentioned why some cities and villages have not put into effect this good business practice:

(a) Existing methods of auditing and paying bills consume so much time that cash discounts are not obtainable.

(b) At certain periods, cash is not available to pay bills.

(c) Some merchants have never been in the habit of allowing discounts.

The Bureau offers practical suggestions for overcoming these obstacles:

"The first obstacle may be removed by changing the system of receiving and auditing accounts so that city and village bills can be paid promptly.

"The second obstacle may be overcome by changing the tax-collecting and accounting systems so that there will be available sufficient cash to pay all outstanding accounts when presented and to prevent incurring obligations when cash is not available.

"The third obstacle may be removed by showing merchants what other cities are doing, by purchasing only from those merchants who allow discounts (provided their prices are lower), or by educating the merchants as to the advantages of a cash discount system.

"Taking cash discounts is good business. It conserves public funds. As it requires the prompt receipt and payment of bills, it makes of the municipality a valuable and preferred customer and thereby increases competition among merchants and corporations for city and village business."

### *Novel Form of Proportional Representation Charter Proposed for Milwaukee*

PROPORTIONAL representation, the short ballot, the vesting of legislative power in the common council and the greater centralization of administrative control in the hands of the chief executive, the mayor, are the outstanding features of a new charter proposed for Milwaukee by the City Charter League. As outlined in the *City Club News*, the charter draft provides that the only officials to be elected are the aldermen and the mayor.

For the election of the common council the city is divided into three districts: the north district, north of North Avenue; the central district, between North Avenue and the Menominee River; and the south district, south of the Menominee River. Each of these districts is a unit for the election of aldermen to be chosen by proportional representation for a term of four years, one alderman for each 7,000 votes cast. The number of aldermen will increase with the increase in the number of voters until it reaches twenty-five.

The mayor, as the chief executive of the city, heads the city administration and appoints the heads of administrative departments for indefinite terms of office, with confirmation by the common council, but removable at his pleasure.

There are five such departments, with a director at the head of each, namely, a director of finance, a director of the legal department, a director of public works, a director of health, and a director of building and safety inspection.

These and other fundamental principles having been adopted by the City Charter League, it is hoped that the exact text of the proposed charter will be drafted and approved in ample time for submission to the voters at the election in April, 1929.

## Items and Abstracts for FINANCE AND LEGAL DEPARTMENTS

### *The Legal Status of the "Hot Dog Kennel"*

CALIFORNIA and New York cases relating to "hot dog" stands as nuisances to adjoining property owners are cited on pages 137-8 of this issue.

Mr. Street's usual department of "The City's Legal Rights and Duties" will be found on pages 177 and 179. It includes this month an interesting group of decisions on puzzling problems of municipal liability, and other cases of importance to city attorneys.

A complete index to all cases reported by Mr. Street in THE AMERICAN CITY during the last four years will appear in the 1928 MUNICIPAL INDEX, now in press.

# The Municipal Bond Market

*By* SANDERS SHANKS, JR.
EDITOR, *The Bond Buyer*

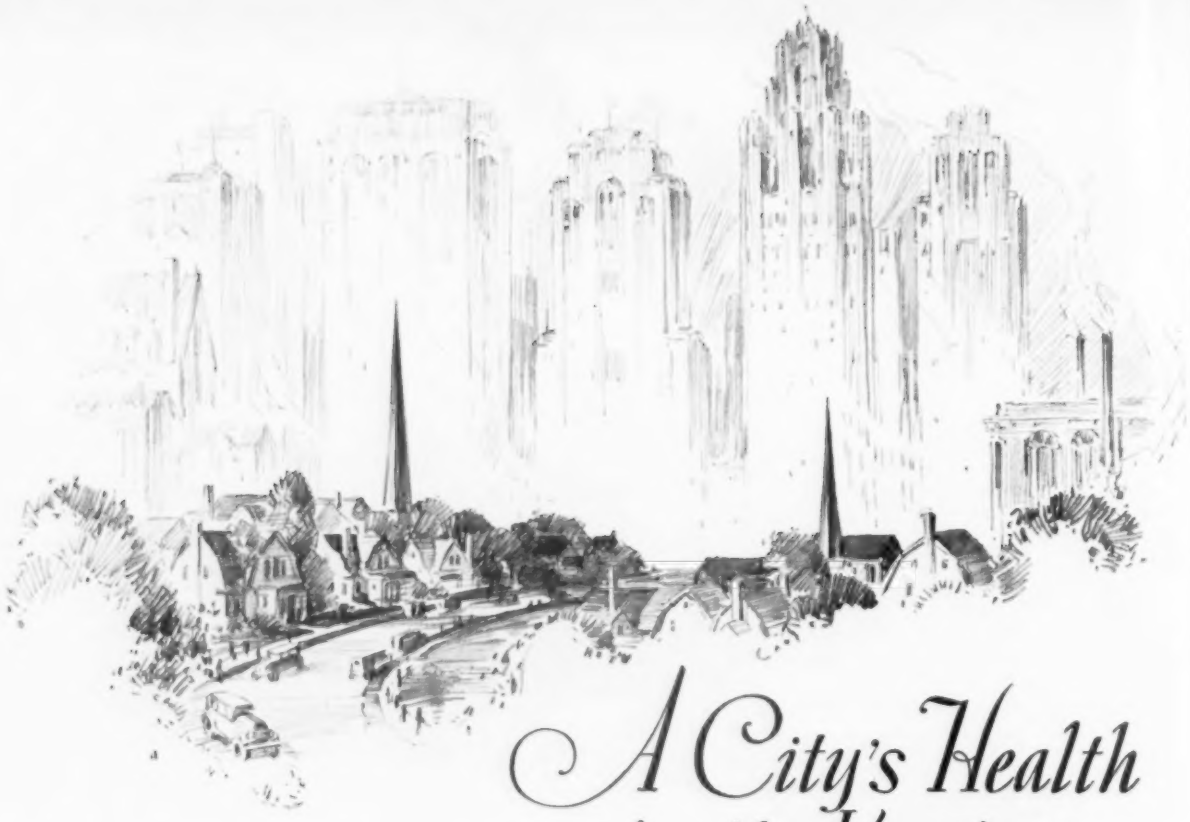
THE first month of the year 1928 finds municipal bond selling at the highest level of prices seen in about twenty years. States and the larger cities and counties are now borrowing funds for capital expenditures at a net interest cost of considerably less than 4 per cent. In fact, several instances of 3½ per cent coupon rates have recently been voted. The State of Vermont was a prominent borrower during the past month, selling $5,000,000 3¼ per cent Flood Relief bonds at approximately par.

REPRESENTATIVE RECENT ISSUES INDICATING PRESENT TREND OF MUNICIPAL BOND MARKET

| Amount | Issue | Rate (%) | Maturity | Net Yield (%) |
|---|---|---|---|---|
| $50,000 | West Reading, Pa. | 4 | 4 5/6 & 15 1/3 Opt. Avg. | 3.49 |
| 15,000 | Marblehead, Mass. | 4 | 1 1/3 Avg. | 3.56 |
| 12,800 | Montgomery Co., Ind., Clark and Scott Tps. | 4½ | 6 Avg. | 3.75 |
| 5,710,000 | Rochester, N. Y. | 4 | Various | 3.75 |
| 1,500,000 | Baltimore, Md. | 4 | 22½ Avg. | 3.78 |
| 15,000,000 | Philadelphia, Pa. | 4 | 20-30 & 20-50 Opt. | 3.88 |
| 500,000 | Altoona, Pa., Sch. Dist. | 4 | 16½ Avg. | 3.89 |
| 20,000 | Evanston, Ill. | 4½ | 15¾ Avg. | 3.97 |
| 12,000,000 | Port of New York Authority | 4 | 10-17½ Opt. Avg. | 4.02 |
| 8,629,000 | Oklahoma City, Okla. | 4 & 4½ | Various | 4.226 |
| 15,000 | San Diego, Calif. | 5 | 2 Yr. | 4.24 |
| 700,000 | Tacoma, Wash. | 4 | 18 1/3 | 4.26 |
| 162,950 | Willoughby, O. | 4½ | 6 1/6 Avg. | 4.31 |
| 70,000 | Tangipahoa Par., La., Road Dist. No. 1 | 4½ | 10 ½ Avg. | 4.49 |
| 40,000 | Swain Co., N. C. | 4¾ | 12 1/6 Avg. | 4.55 |

An important feature of the situation in January was the falling off in the supply of new issues reaching the market. Encouraged by this development, dealers have been competing sharply for all new bonds offered at public sale. In view of the generous amount of borrowing which has been authorized in recent months and the known capital requirements of municipalities, however, it does not seem probable that there will continue for long to be any scarcity of new loans and it is not felt that any further advance in prices may be looked for unless fundamental conditions, affecting all fixed interest-bearing securities, should change for the better.

During February, the municipal bond market may be influenced by such special factors as large offerings by the City and State of New York. Another development which will be watched with interest and which may have an important bearing on the bonds of many cities, counties and school districts is the expected introduction in the New York legislature of a revised law regulating the investment of savings-bank and trust funds. The present law restricts such investments to cities with population of 45,000 and net debt of 7 per cent. The new measure will probably lower population to 30,000 and raise the debt limit to 10 per cent, besides admitting to the legal list bonds of certain school districts and counties in which is situated a city whose bonds qualify as legal investments. (For action on this subject by the New Jersey State League of Municipalities, see THE AMERICAN CITY for January, page 174.)



# *A City's Health in its Keeping*

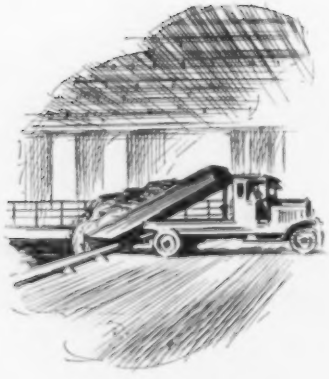
TIME was when our country was one of small communities.

With the turn of the century a new, more splendid era was begun. Towers of commerce, in stone and steel, reach high into the blue above the onetime village squares. Apartments spring up. Cities spread.

Yet, though cities grow in size and wealth and power, their citizens still have need of the old elemental things — cleanliness and pure air.

Bartlett-Snow garbage and refuse disposal plants can contribute much to municipal health; for they will effectually solve the problem of waste disposal. There are two methods, incineration and sanitary reduction, and both are efficient, economical and clean.

Every municipal officer should read the Sterling Distructor and the Cobwell Reduction Process booklets. They point the way to modern waste disposal.



THE C. O. BARTLETT & SNOW CO.
6220 Harvard Avenue, Cleveland, Ohio

# Bartlett - Snow

## *Refuse Disposal Plants*

Yes—we should like you to mention THE AMERICAN CITY.

# Items and Abstracts for CIVIC AND COMMERCIAL ORGANIZATIONS

### *Two Excellent Definitions of City Planning*

THE proper coordination of all phases of civic development, to the end that a city may grow in a more orderly way and provide adequate facilities for living, working and recreation.

—From the Civic Development Department of the Chamber of Commerce of the United States.

Town planning may be defined as the scientific and orderly disposition of land and buildings in use and development with a view to obviating congestion and securing economic and social efficiency, health and well-being in urban and rural communities.

—From the Journal of the Town Planning Institute of Canada.

### *"Civic Organizations: the Fifth Estate of the Realm"*

THE *New York Times* coined the phrase in a recent editorial commenting on the advocacy, by the Fifth Avenue Association of New York of several projects for the orderly development of Manhattan. This recognition of the place which civic organizations have taken in the upbuilding of our American cities has been echoed by other members of the press, and seems destined to become a highly valued title to which any organized group rendering civic service to its community may properly lay claim.

Membership in the Fifth Estate need be no passive honor, but an active and important one, as was the honor which accrued to "estates" in the western Europe of the thirteenth century when the growing power and wealth of cities created them, and through them brought about the disruption of feudal society. The original Three Estates—clergy, nobles, and commons, which in a general way represented the form of governmental organization till the time of the French Revolution, gradually gave place to a popular and symbolic Three Estates, comprising lords spirtual, lords temporal, and the commons. The Fourth Estate has been popularly recognized, since a famous speech of Burke's, as being the press.

There is abroad today in our cities a movement which parallels the breaking up of medieval feudal society and the creation of new estates, or classes, with active power in governmental affairs. To the new demand for broader and more flexible control of municipal and civic progress, the answer may well be the Fifth Estate—group representation of enlightened public opinion brought to bear scientifically upon the conduct of our common affairs.

One of the earliest reactions to this editorial in the *Times* was another appearing in the *Hudson Dispatch* (Union City, N. J.), in which the Fourth Estate welcomes the Fifth Estate to the field of practical civics. Commenting on the vast advances made in civic work in recent years, the New Jersey editorial continues:

"There is still a great deal of 'hokum' in civic work. At times it seems as if paid workers in various lines of civics are much overdoing the 'professional' side of civics. But the groundwork is substantial. Men of fine ability have gone into work as secretaries and executives of chambers of commerce, merchants' associations, trade associations, etc., and are doing work in a businesslike way that could not possibly be carried on by volunteers from the ranks of business men who give their first attention to their personal affairs. Civics has gone to the front very rapidly. To have achieved the distinction of 'The Fifth Estate' from so distinguished a member of the Fourth Estate as *The New York Times* is recognition not to be denied."

### *Gradual Passing of the Undiscriminating Desire for Mere Bigness*

THAT comprehensive community surveys, listing assets and liabilities, are taking the place of old booster methods, and that American cities are gradually abandoning their undiscriminating desire for mere bigness, in favor of systematic and economic development of their metropolitan areas, are conclusions reached by the Civic Development Department of the Chamber of Commerce of the United States in a brief review of the trends disclosed in 1927.

"The desire for expansion," the Department says, "is continuing but it is developing into more carefully thought-out expansion. More discrimination is being shown in the quest for industries. Recreation and education, housing and health, sanitation and paving are being more and more related to one another, and a balanced city is gradually developing.

"Seventy-three of the largest cities realize the importance of developing their metropolitan areas. In fifty-five of these work is well under way in preparation for the 1930 census; several have completed maps of their metropolitan regions. A metropolitan region is not a paper figure of population and land; it is an economic unit within which the business of the entire community is transacted. It is an area with common advantages and disadvantages, with problems which must be solved if the welfare of the entire district is to be benefited. The establishment of a metropolitan area is the first break in the corporate walls that have so long separated the political city from its surrounding territory.

"Because of this, significant changes are taking place. Improvements which were once confined to the area within the city are now being given to those without."

### *Needed—An Informed and Public-Spirited Citizenry*

THE men and women who hang precariously to straps in crowded street cars, busses and trains for long rides between their work and their homes, the children who must cross dangerous streets of heavy traffic to reach their schools, the families who live in the wrong kind of houses on the wrong kind of lots facing on the wrong kind of streets, or those who exist in a few small, crowded rooms without sunlight and with inconvenient or no access to grass-covered, tree-shaded parks, are all suffering from troubles which they cannot cure for themselves. They are victims of our failure to realize that community building, town building and city building are highly technical processes which need the service of many specialists and the study and understanding of the voters who must pass upon public improvements and planning measures.

Nearly four hundred towns and cities have planning commissions. Most of these have launched planning projects, though many have failed to provide comprehensive, city-wide plans. We have only begun to attack the job of regional planning. We dimly recognize the need for state and national planning. The annual sacrifice of street trees in the mistaken name of progress and the pitiful inadequacy of tree-planting programs continue to contribute to the devastating effects of urban occupation. What we need to stimulate civic improvement is an informed and public-spirited citizenry—a body of citizens who understand the general principles of planning and zoning, who know the pros and cons of different methods of paying for good living and working environment, who exercise discrimination between good and bad buildings, and good and bad parks, good and bad highways and good and bad uses of land.

—From a recent statement by the American Civic Association.

### *Brief Statements of Civic Work by Chambers of Commerce*

are always welcome for the "Forward Steps" department. This section will be found on pages 143 to 148 of the present issue.

**Is Your Organization Supporting This Movement?**

**From the point of view both of esthetics and good business, the appeal for the conservation of natural beauty printed on page 150 of this issue merits the consideration of every commercial and civic organization executive. Here are three special suggestions:**

**Advertise your town by beauty of streets and approaches (not by rural billboards).**

**Name your town by a small and artistic marker which will not mar your entrance.**

**Keep your billboards in commercial districts.**

# ONE DOLLAR A MONTH MAINTAINS THIS FLASHER

The W & T Dry Battery Flasher, operated from ordinary dry batteries with automatic lamp changer insuring continuous operation, costs less than $1.00 per month to maintain. It is a compact, inexpensive, reliable flashing mechanism—the product of an organization of engineers with over 8,000 installations of various equipments in North American municipalities.

And each installation of the W & T Dry Battery Flasher is backed by a countrywide service organization.

*Write for*

TECHNICAL PUBLICATION No. 86

*Also see our advertisement page 10.*

## WALLACE & TIERNAN

COMPANY, INCORPORATED

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## Items and Abstracts for DEPARTMENTS of PUBLIC SAFETY

### *Committee Report on Street Signs, Signals and Markings Nearing Completion*

AT the annual meeting of the American Engineering Council, held in Washington, D. C., January 9-11, there was submitted a tentative report of the Council's Committee on Street Signs, Signals and Markings. After considerable discussion, the Board of Directors adopted the report in principle and referred it to the Executive Committee for final action. Such a report involves of necessity a number of controversial questions, and agreement on these must be reached before the report can be made available for publication. When the document is complete, which it is hoped will be within the next two months, it will be of great aid to municipal officials, traffic engineers and others interested in the standardization of methods of traffic control and facilitation.

### *A New Method of Sentencing Criminals Urged by Governor Smith*

THE following proposal, which is attracting widespread consideration among penologists, was made by Governor Alfred E. Smith, of New York, in his recent address to the 1928 Legislature:

"I have for some time, because of my direct experience with the results of the administration of criminal justice, become deeply impressed that we could make a great stride in the direction of real justice if we changed somewhat our methods of administering it. We are dealing with human beings, no two of whom are ever under normal circumstances exactly alike. How much more are they likely to differ under abnormal situations.

"We have progressed in our knowledge of the processes of the human mind and the influence on it of physical conditions. I would like to see that knowledge applied to the determination of the kind and duration of punishment best adapted to bring about the restoration of delinquents to normal social life.

"Because of my belief that justice sometimes miscarries because those charged with determining guilt are often affected by the thought of the sentence to be imposed for a given crime, I would suggest that the Crime Commission give careful study and consideration to a fundamental change in the method of sentencing criminals.

"After guilt has been determined by legal process, instead of sentence being fixed by judges according to statute, I should like to see offenders who have been adjudged guilty detained by the state. They should then be carefully studied by a board of expert mental and physical specialists who, after careful study of all the elements entering each case, would decide and fix the penalty for the crime.

"I realize the complexity of such a fundamental change. It probably requires even constitutional amendment. Therefore, I recommend that your honorable bodies request the Crime Commission to report to you, after due and careful study of the proposal, whether such a change is advisable and how it can be brought about. It appeals to me as a modern, humane, scientific way to deal with the criminal offender."

### *Modern Building Code Proposed by Chamber of Commerce Adopted After Four Years' Effort*

IN its *Monthly Bulletin* for January, the Chamber of Commerce of Reading, Pa., reports that almost four years after its preparation was undertaken, a modern building code submitted by that body to the City Council has been enacted into law and is now effective. The story shows the need and value of continued effort in such an undertaking:

"More than eighteen months were required for the committee to prepare its first draft of the code, which was then submitted to City Council. After several months' consideration, that body decided that a number of changes would be desirable and the code was referred back to the committee. Jacob H. McConnell, of Council, met with the committee during the past year, when twenty-two additional meetings were held, and the measure was finally submitted last spring.

"That Reading needed this legislation is apparent from the fact that the most recent city legislation bearing on general construction dated from 1892, when concrete was almost unknown in general building work.

"Yet, no sooner was the code adopted, then a change was requested by a national association representing iron and steel fabricators, because United States standards had changed during the time the code was in preparation. Owing to the simplified numbering of the divisions of the code, first suggested by Mr. McConnell, changes can be made very readily upon approval by City Council. This instance is cited to show that legislation such as a building code can never be quite in accord with the latest engineering practice and must be readily adaptable to changes, as is the case with the Reading code."

### *Fire Apparatus Suffers from Too Much Tinkering and Too Fast Driving*

IT is not an uncommon thing today for pleasure automobiles and trucks of the best manufactures to operate 50,000 miles without any major repairs, yet pieces of motor fire apparatus which only travel from 500 to a maximum of 1,000 miles a year are generally thoroughly overhauled every year or two, and few pieces of fire apparatus have seen over ten years' service. I believe there is too much tinkering done by the mechanics and operators in the department, and perhaps improper driving may contribute slightly to its rapid deterioration.

Much of the fire apparatus in this country is driven too fast and without due caution. It is true that time is an important item, but it should not be given too much weight. During the year 1925, statistics show that more firemen's lives were lost going to fires than were lost in fighting fires. Let us analyze the question of time. From the time a fire starts, a varying and unknown length of time elapses before it is discovered. Then a certain amount of time is required to get the alarm to headquarters, depending upon the distance which the discoverer has to go to a fire-alarm box or to a telephone. When the box is reached, only a few seconds elapse before the assigned companies are under way. When the telephone is used, a longer time elapses and under unfavorable conditions there may be a considerable delay.

In our high-value districts, apparatus is generally within three-fourths of a mile to a mile of the fire, and in outlying districts from two to three miles from the fire. In any case, only a minute or two can be saved, whether the apparatus is driven at a rate of 25 miles an hour or 50 miles an hour. It is the opinion, however, of those who have made a careful study of the problem, and who are conservative in their ideas, that the maximum speed should not exceed 35 miles an hour and that no definite rate of speed in any particular locality should be specified. If the driver is alert and careful, he can drive at the maximum speed at which he always has the apparatus under such control that he can stop at the near curb line at the intersection of streets.

Pumpers necessarily have powerful engines to drive the pumps, and well-drawn specifications require engines of at least 35 horsepower on hose wagons and ladder trucks. With engines of this size, apparatus can be rapidly accelerated and also have sufficient power to maintain the desired speed through snow and over paved roads.

—From a paper read before the annual convention of the Ohio State Association of Fire Chiefs at Mansfield, by Clarence Goldsmith, Assistant Chief Engineer, National Board of Fire Underwriters, Chicago.

### *Small Cities Adopt Ordinances for Safer Roofs*

*McAllen, Texas.*—An ordinance has been passed prohibiting the use of wooden shingles for roof coverings in the city limits and calling for all existing wooden roofs to be replaced with fire retardant roofing after a period of 10 years.

*Concord, N. C.*—An ordinance controlling the hazard of the flammable roof has been passed in Concord, N. C.

*Hickory, N. C.*—An ordinance prohibiting the use of wooden shingle roofs throughout the city limits has recently been adopted in this city.

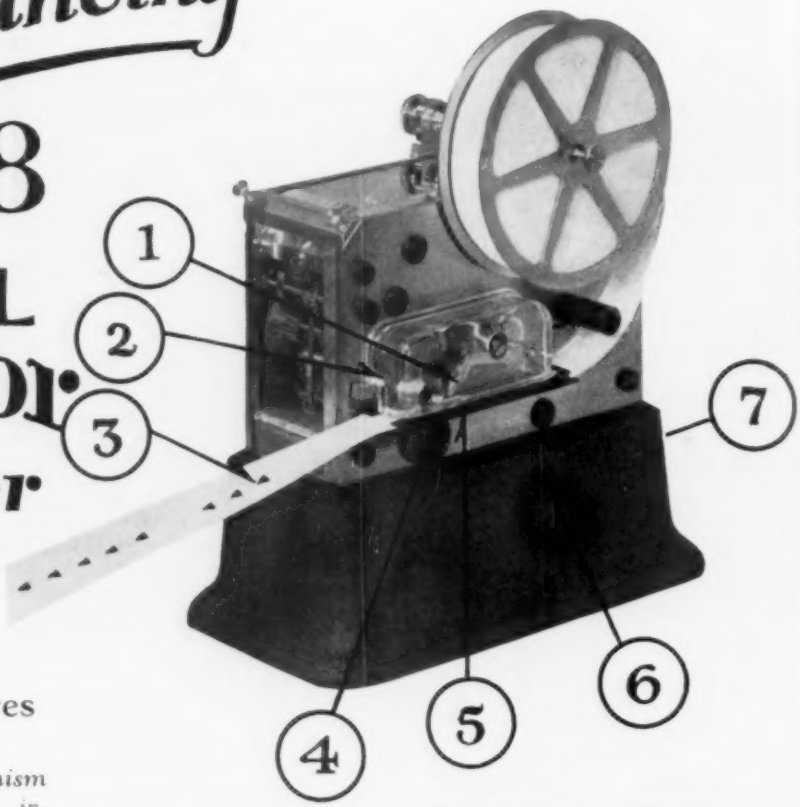
—From the January, 1928, Bulletin of the National Fire Protection Association.

### *A Safety Yell for School Children*

Stop, Look, Listen
Before you cross the street.
Use your eyes; use your ears;
THEN use your feet.

—From a leaflet of Safety Songs, issued by the Bureau of Public Safety of the Detroit Police Department. The "yell" above quoted is credited to Carl McKay, Alhambra, Calif., grade 4A.

# Announcing the 1928 MODEL Excelsior Register




## 7 Important Features

1. *A New Recording Mechanism* **punctures** *the signals instead of* **punching;** *involves only ¼ the shock and greatly increases the operating speed.*

2. *A Molded Polished Glass* **Cover** *protects the new recording mechanism.*

3. *Triangular Signal Holes point in the direction the signal is traveling.*

4. *A More Powerful Paper Feed has increased the reliability and has also increased by 50% the number of blows that can be obtained from one winding.*

5. *An Improved Paper Guide makes the paper feed easier.*

6. *A Redesigned Base eliminates the need of a sub-base when register is used with a time stamp.*

7. *Redesigned Magnets with the same insulation as those in the Peerless Box, will operate down to 60 milliamperes.*

These seven important features have been built into the *1928 Model Excelsior Register* to make it a *Million Blow Register.*

In demonstrations before Fire Chiefs and Municipal Electricians at Portland, Oregon, and Salt Lake City, Utah, the new register operated almost continuously for 120 hours—striking 864,000 blows. Practically no signs of wear were evident at the close of this test.

This new register replaces the old Excelsior Register which had a reputation for its sturdy build. It was designed in a different age, however, and changing conditions threw a heavier burden on registers. Our engineers observed this change and brought out the *1928 Model Excelsior Register* to meet present-day conditions.

*(A bulletin describing this Register more fully will be sent upon request)*

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Newton Upper Falls, Mass.

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MICHAEL J. CORRIGAN
Fire Chief, Chicago
(Appointed 1927)

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Fire Chief, Peoria
(Appointed 1925)

W. H. FUNDERBURK
Fire Chief, Springfield
(Appointed 1927)

W. C. WATTERS
Fire Chief, Oak Park
(Appointed 1926)

C. W. ROYCE
Fire Chief, Joliet
(Appointed 1913)

# WHO'S WHO IN FIRE FIGHTING

*Installment No. 2—Portraits of Fire Chiefs in Fourteen Cities of Illinois*

ELMER HENRYSON
Fire Chief, Elgin
(Appointed 1923)

ROLLA B. NEAL
Fire Chief, Bloomington
(Appointed 1923)

JOHN E. CATER
Fire Chief, Galesburg
(Appointed 1923)

M. S. PHILIP
Fire Chief, Chicago Heights
(Appointed 1912)

EDWARD T. NOLAN
Fire Chief, Freeport
(Appointed 1918)

J. C. WEAVER
Fire Chief, Mattoon
(Appointed 1915)

H. C. HOSUTT
Fire Chief, La Salle
(Appointed 1927)

JULIUS F. JAECKEL
Fire Chief, Pekin
(Appointed 1889)

ALBERT HERRING
Fire Chief, Murphysboro
(Appointed 1901)

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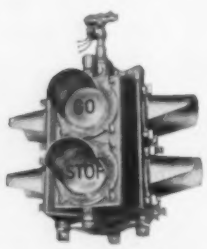
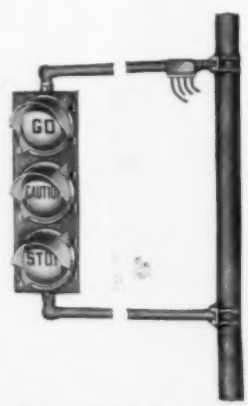



KF7 Four-Way Signal With Adjustable Sides Arranged for Span Wire Suspension




KBI — Vertical One-Way Traffic Signals

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*Municipal Signal Manufacturers*
MOLINE, ILLINOIS

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*INFORMATION AND PRICES ON REQUEST*

Vol. XXXVIII
No. 2

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# L'Enfant's Dream of Washington Coming True

*The City Planned by the French Engineer 137 Years Ago Becomes Increasingly a Reality as Washington Reverts to His Plan and Congress Fosters Its Development—The National Capital to Be the "Wonder City" of North America When Recently Adopted Plans Are Executed*

By JOHN LEO COONTZ

WITH the authorization last month by Congress of $25,000,000 for the purchase of land within "The Triangle,"—that portion of the city of Washington below Pennsylvania Avenue between the Capitol and the Mall,—the L'Enfant plan for the physical development of the Federal City, held in abeyance for a century, becomes a factual reality. For the development of "The Triangle" carries with it acknowledgment of the Mall project and its future consummation, the largest and most stupendous of the projects of the young French engineer for the beautification of the city.

L'Enfant builded well. Washington, who came up from Mount Vernon to superintend personally the laying-out of the Federal City, as he called it, must have seen with prophetic vision the growth of the new nation as sketched by L'Enfant in its capital. He permitted it. Spaces were left deliberately, with the assurance of that sense which built so broadly elsewhere, that time would fill them in and that when the whole was done, the pattern would be most beautiful to behold.

In no other way could the Washington of today have been made possible. There needs must have been a sketch, an outline in the beginning with miry paths trailing great distances and dwellings grouped on lightless ways for many years to come. This is the more appreciated when one reflects that there were in all America at that time but slightly over 4½ million souls.

In brief, L'Enfant planned that the National Capitol should be at the east end of a west-and-east line running through a point near the present Washington Monument, and that the White House should be at the north end of a south-and-north line running through the same point, and that all in the way of beauty, architectural and otherwise, that could be made possible by human skill, ingenuity and genius, should be lavished upon the Mall, the parks and avenues, and the public buildings that were to be laid out and erected in association with those two lines or axes.

"The plan of L'Enfant was such that no less than 16 avenues in this city were to open upon vistas revealing the National Capitol, and that other avenues in the same way were to open upon vistas revealing in the same artistic manner the White House, or President's House, as it was called.

"The Mall, which was to be laid out for a distance of a mile and a half from the National Capitol to a point near the present site of the Washington Monument, was to be no less than 400 feet wide. Flanking these parks were to be public edifices of the city; and the Mall, parks and avenues were to be adorned with monuments and statuary and other artistic objects."*

### Triangle, Mall, Park and Plaza

A proper understanding of the development of artistic Washington now under way requires that it be approached from three separate angles—Triangle, Mall, Park or Plaza (or Park and Plaza) which includes the Union Station project.

Within the Triangle the Government has already acquired numerous parcels of land and during the past year on several of them has started departmental building under a $50,000,000 appropriation authorized by the 69th Congress. The acquisition of residuary land, under the $25,000,000 appropriation, is designed to bring within the ownership of the Government the whole Triangle for improvement and development. Plans for this dual action have already been prepared by experts and are at present in the hands of Congress. They are largely the work of a special committee of architects assembled at the request of the Secretary of the Treasury, under whose office falls the administration of this particular project.

Buildings scheduled for erection by the Government within the Triangle to date are: Department of Justice building; Archives building; Internal Revenue building; Department of Labor building; Department of Commerce building and Art Gallery (proposed). The Archives building, ground for which has already been broken between Pennsylvania Avenue and the Smithsonian Institution (National Museum building) on 10th Street, has an estimated cost of $6,900,000. The Department of Commerce building, to be located on Fifteenth Street facing the Presidential Park in the rear of the Treasury and the White House, has a cost of $17,000,000. It is the largest of the buildings in the proposed Triangle group. Plans for the remaining buildings are under way.

Leaving the Triangle, one finds off the left of its eastern apex, between it and the Capitol, the Botanic Garden—or rather, now, the site of the old Botanic Garden.* The site itself is an apex—

* Senator Bruce of Maryland in Congress.

* The 69th Congress authorized a new site south of the present one at a cost of $800,000.

that of the Mall which sweeps up from the west to the Capitol door south of the Triangle.

Physically, the site is a part of the Mall; architecturally, it is a part of the Capitol scheme of things beautiful. The tip of the Mall, the Mall never developed, the Garden existent almost since the establishment of the Capitol in Washington—the spot has ever been under the wing of Congress. It rides therefore with the Capitol and Capitol grounds for beautification under the watchful eye of the architect of the Capitol, David Lynn. And lately, within the past year has been added to the twain the Union Station Plaza project—a parkway between the Capitol and the Union Station to its north.

Today this parkway area is occupied in large part by "Government hotels" built in war-time, temporary structures for the housing of increased war-time personnel. These it is planned to destroy, improving the whole expanse with beautiful parks. From the Union Station an avenue is designed to be run directly to Pennsylvania Avenue—a new avenue—cutting the historic one about at Second Street, two blocks from the west entrance of the Capitol grounds. Fifty-five acres in this area were acquired recently by the Government at a cost of more than $5,000,000, looking towards the fulfillment of this grand park scheme.

Union Station Plaza—as this acreage when improved will be known—ties in perfectly with the Capitol grounds, which extends the formal scheme of things on to the old Botanic Garden site, which in turn passes it on to the Mall proper, flowing westward to Washington Monument, the Reflecting Pool, Lincoln Memorial and Arlington bridge, now building.

High spots in this Plaza-Capitol-Mall extension consist, according to plans now before Congress, of elaborate formal treatment of the Plaza with gardens, statues, fountains, landscaping the old Botanic Garden site, the building of a mirror basin just west of the site, formal treatment of the rest of the Mall with parks and architecturally beautiful Government buildings, and cross-paneling of it between Seventh and Ninth Streets, extending Ninth Street through to the Mall.

*Airplane views, official photographs, U. S. Army Air Service, Photographic Section.*

**AIR VIEW OF THE CAPITOL, WASHINGTON, SHOWING THE BOTANIC GARDENS IN THE DISTANCE, OPENING ON THE MALL**

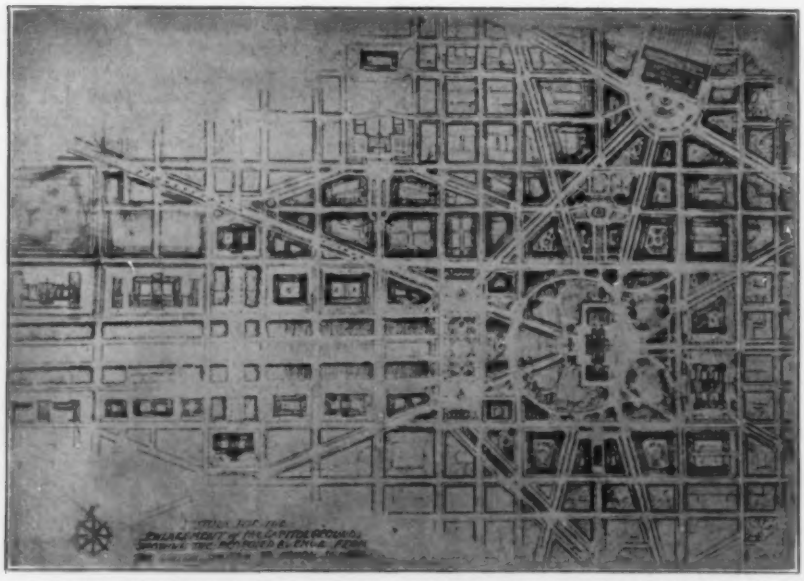
**The Gardens are soon to be removed in accordance with the plan to beautify the Mall area, reaching from the Capitol to the Washington Monument**

### Forty-Eight State Buildings Proposed

In this mile-and-a-half Mall strip, 400 yards wide, lying from the foot of the old Garden site westward, it has been advanced by individual Washingtonians that there be erected 48 state buildings, symbolic of the Union and giving strength to the national ideal. In presenting this suggestion, those who sponsor it point out the solidifying influence of such integral state headquarters at the Capital. To these temples, it is suggested, there could repair visitors to the Federal City from the respective states of the nation, on both formal and informal occasions. The temples would have their other uses also, especially at inauguration times.

Of this particular development, Lt. Col. U. S. Grant, 3rd, Director of Public Buildings and Public Parks of the National Capital, has said:

"There is, unquestionably, merit in the proposal. It would be fine, not only from the standpoint of the Union but from that of the city as well, which we are desirous of seeing beautified in every manner possible, for such temples to be built. But in my opinion there is not space enough in the Mall for such a magnificent undertaking. Again, we who are charged with the architectural and landscape beauty of Washington, tomorrow as well as today, feel that such a scheme of beautification for the Mall would not give to Washington that proper balance we are striving for in



**COMPOSITE PLAN OF ARCHITECTURAL AND PARK TREATMENT OF WASHINGTON FROM UNION STATION TO THE MALL VIA THE CAPITOL**

**The Triangle is that section immediately south of Pennsylvania Avenue and north of the north line of the Mall, which is shown extending directly west from the foot of the Capitol. The Union Station Plaza lies between the Capitol and the Union Station on the north—a triangular area—bounded on the west by a new avenue, yet to be named, which debouches into Plaza Square just north of the old Botanic Garden site**

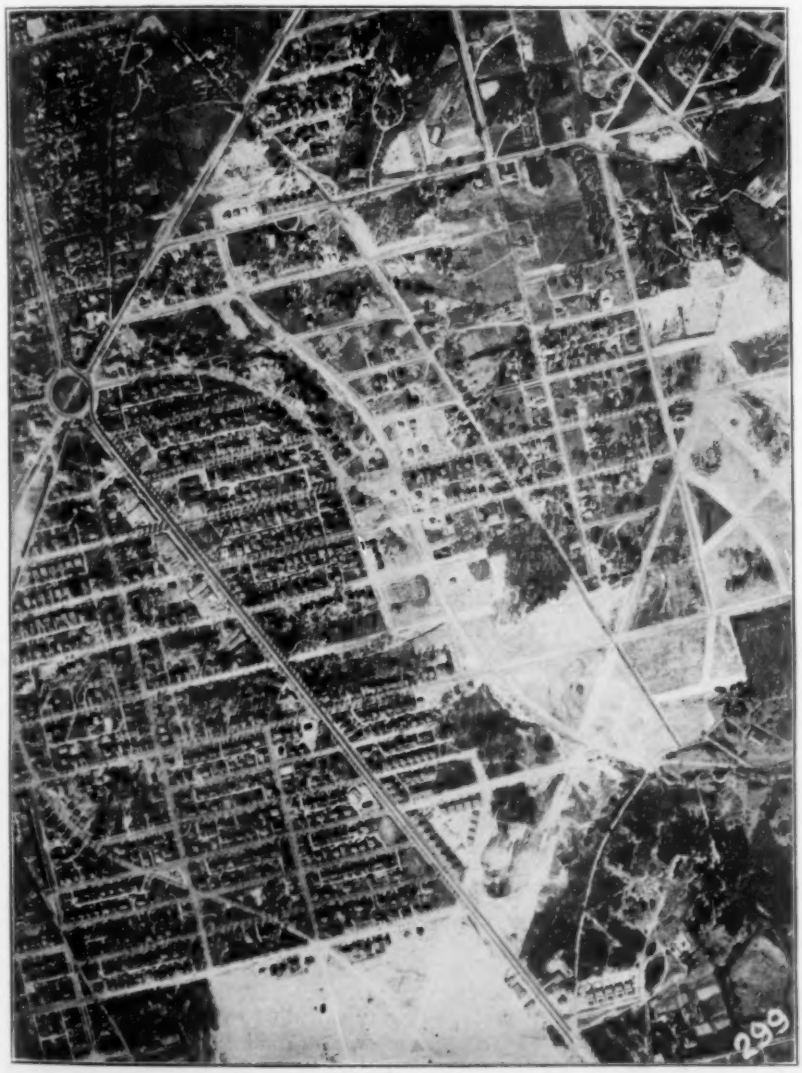
all our work. On the other hand, there is along East Capitol Street a block mileage of sufficient distance to carry out such a gigantic building program, a mileage which, if utilized for this purpose would give to the east-and-west line of the city an architectural magnificence and balance unsurpassed."

Suburban development of Washington also enters into the great civic development under way.

Certain points of contact have already been established between the official bodies of the District of Columbia and certain of those of the states of Maryland and Virginia, looking toward umtary development of areas contiguous to the city of Washington. For the most part, these contacts consist of plans. Something of a regional scheme has been outlined.

The Sixty-ninth Congress created the National Capital Park and Planning Commission. The Commission is purely an advisory one to the proper executive officials of the District as to traffic and transportation; plats and subdivisions; highways, parks and parkways; schools and library sites; playgrounds; drainage, sewerage and water-supply; housing, building and zoning regulations; bridges and waterfronts; commerce and industry, and other civic activities.

**LINCOLN MEMORIAL AND UNDEVELOPED AREA ALONG THE POTOMAC**
**This area is destined in time to be the site of many Government buildings**




**HIGHWAY DEVELOPMENT OF CHEVY CHASE REGION UNDER THE L'ENFANT PLAN**

It is, however, as a body designed to function with the state and county authorities of Maryland and Virginia that the Commission is destined to find its greatest usefulness. Over into the two states swiftly growing Washington is fast spreading. The desire for cooperation, and the need of it, is here where subdivisions are springing up like mushrooms.

A part of the Maryland plan of cooperation already outlined is a park, to be known as Northwest Park, through Montgomery and Howard Counties, a region rivaling Rock Creek Park.

This new park as planned will extend from the point where Northwest Branch meets the District line through Montgomery County up to the headwaters of Howard County. Its utilitarian purpose will be to preserve and protect the water system for a newly laid-out subdivision there, the plant for which was opened at Burnt Mills, Md., a short time ago.

A more recent step towards the preservation of the natural beauty of the District with park areas was the signing by President Coolidge of the Congressional act under which $600,000 is being appropriated yearly for the purchase of land for the park program, especially Fort Drive. The proposed drive will encirele the city from fort to fort established for its defense during the Civil War. By this act the city stands forth to be girdled in time by a correlated series of park drives unsurpassed in beauty.

# Shall We Abolish Sleep?

*The 24-Hour Street as a Means of Reducing Traffic Congestion*

By JOHN S. CRANDELL

Professor of Highway Engineering, University of Illinois

TRAFFIC and more traffic; congestion and more congestion; waste of time and waste of money! Yet what do we do about it? Talk, and more talk. Police departments frame uncomfortable rules for regulating traffic, engineering departments plan impossible designs for street improvements, boards of trade beseech their members to refrain from parking their own cars where customers would like to park, and still the congestion grows.

Much of the traffic congestion of large cities could be eliminated by the simple expedient of using the streets 24 hours of the day. If the railroads stopped their trains shortly after sunset and started them about 8 o'clock in the morning, it would be necessary for them to double their existing mileage of tracks in order to carry the passengers and freight that they carry at present. And what a howl there would be from everyone if such an absurd arrangement were put into practice! Yet no one howls because most streets are used only half the time. As a matter of fact, the howl will be raised when it is proposed to use them more. Let us examine the matter carefully.

Several classes of traffic exist in all cities. There are passenger cars, retail-store delivery wagons, wholesale-store delivery trucks, municipal trucks, building-materials trucks, post-office trucks, and through traffic consisting of most of these. Under these heads may be grouped several types that have not been specifically mentioned. It goes without saying that the passenger cars must be free to travel the streets at all times, and the retail store deliveries must be made in the daytime. Through traffic and trucks from the post offices will be passing to and fro at all hours. This leaves the wholesale-store trucks, the municipal trucks, and the building-materials trucks unaccounted for.

Thousands of freight trains leave their terminals during the night. Hundreds of motor trucks run on night-time schedules on the through routes between the big cities. These trains and these trucks avoid the congestion that they would cause if they moved solely in the daylight hours. But our city traffic of this character stops abruptly at the close of the business day, thus turning our streets into maelstroms of activity all day long, and into empty canyons after the theater and movie fans return home at night. And there is no good reason why this should be so. The large retail stores in New York long ago proved this. If you purchase an article in a downtown retail store in New York and order it sent to you, the store will send it at night in a truck to a transfer station somewhere in your neighborhood. Here it is taken from the truck and placed in a local delivery wagon which arrives at your residence the next morning. The transfer station is open all night; the trucks arrive there quickly through the deserted streets, and neither time nor money is lost getting the article away from the daytime congestion district.

### Night Collection of Garbage and Ashes

Reformation of traffic schedules should begin with the municipal trucks. There is no reason why the collection of garbage and ashes should not be made at night, while there are many reasons in favor of it. It may be that there are other departments under municipal control which could be operated as well or better at night. This feature should be studied for each particular city.

It is the custom in many localities to close the freight stations and docks at a relatively early hour in the afternoon. There is no good reason why. With modern methods of lighting, these places should be open for the entire 24 hours. Lack of light was the excuse in former years for closing at sundown, but that is no excuse for continuing the practice now. With freight stations and docks open at all hours, it would be a simple matter to convince wholesalers that they could save huge sums by transporting their goods at night, keeping their receiving platforms open, and turning their business into night and day shipping. It is no uncommon sight to see lines of trucks waiting hour after hour in the lower downtown streets of New York until such time as they can be accommodated at the docks, ferries, and freight terminals. With 24-hour service this congestion would immediately cease. Of course, it will be argued that it will cost money to keep traffic moving, terminals open, and warehouses ready to receive goods at any hour of the day or night, but the amount required is not nearly so great as that lost at present by traffic jams and blockades. The retail stores have pointed the way. Some cities have half-heartedly tried the scheme of making certain industries move their goods after 6 P. M., and they have been surprised to find how well it works. But no city has gone far enough, and perhaps it is not the city's place to dictate absolutely to the merchant, who is paying the taxes, what he shall do. The merchant himself is the one who should take the initiative, with the city's advice and assistance.

### Handling Bulky Materials

Bulky, slow-moving materials, such as stone, brick, lumber, dirt, and other building-supplies should be moved at night from or to the site of operation. Excavation may be carried on quickly and cheaply by artificial light, while trucks carrying the excavated material can travel rapidly through the empty streets at night. This has been done, of course, to some extent, but only in the most congested districts. All trucking for building should be done at night in cities of any size. This should be a city traffic regulation. It may be confidently expected that the usual complaints and kicks will be forthcoming from contractors and labor. Once the plan is in operation, however, everyone will see that the change is for the better.

The collection of express packages in the business district should be made at night. In the large office and loft buildings the tenants should send their packages to a shipping-room set aside in the building for that purpose, and that room should be kept open day and night for the reception and sending of express packages. The cost of operation of such a room would be more than offset by the speeding-up of the service. This means, of course, that the express companies would be compelled to keep their receiving platforms open all the time.

### Using What We Have to Full Capacity

The hopeless jumble that traffic is in now is not aided to any great extent by new police regulations, new signals, new laws, or re-routing. The dreams of engineers who would build elevated roads are impractical as well as expensive. The one scheme at present worth trying is to use what we have to its full capacity, and this may be easily accomplished by inducing traffic to flow during the night. Some of it may be compelled so to move by law; some may be argued into it; and some will move when the main body moves or is moved. Let us begin an attack on the city fathers and force them to collect garbage and ashes at night. Then let us go to the wholesalers, the railroads, and the steamship lines and let in the light so that they may see whither they are *not* traveling. Then the building trades will be the next on the list, and we will continue until every transportation agency that may profitably do so will be operating at night.

# The Maintenance of Gravel Roads

*Data from Nova Scotia and Michigan*

## GRAVEL ROADS IN NOVA SCOTIA

R. W. McCOLOUGH

Chief Engineer, Department of Highways, Nova Scotia

IN the province of Nova Scotia all roads except those through cities and towns and a certain few private roads are the responsibility of the Department of Highways. This gives the province of Nova Scotia 15,000 miles of highway or .03 of a mile per capita. Of this large mileage, 5,000 miles have been surfaced with gravel and comprise our more important roads. Climatic and traffic conditions indicate that for many years to come the gravel-surfaced road is the one best suited to the needs of the province. There will be short pieces of road over which the traffic is unusually dense, where higher types of construction will prove to be more economical, and in such cases these will be so constructed. The immediate problem of the province, however, is to maintain our system of gravel roads at a high standard and at a minimum of cost. It is to be noted in this regard that it is found invariably that the motoring public insists on perfect roads wherever highways have been reconstructed.

### Proper Construction Essential

Satisfactory maintenance depends upon proper construction, and the elements of proper construction are:

1. Good drainage
2. A top so nearly flat that it cannot be called convex or concave
3. A minimum width of 24 feet

### Maintenance Organization

Deterioration of a gravel road can only be averted by vigilant maintenance. The riding qualities of a gravel road, more than that of any other type, are affected by the class of maintenance to which the road is subjected. Systematic maintenance is essential if traffic riding conditions are to be maintained. Systematic maintenance means a patrol system. The length of the patrol depends upon a number of factors—density of traffic, quality of travel, etc. The length will vary from three to six miles. Proper equipment is the first essential of a satisfactory patrol. Maintenance work should be effected by machinery whenever possible and, if necessary, the foreman should have a helper. The patrolman should not undertake heavy repairs, but these should be left to a foreman and special gangmen. Thus, the foreman will be able to attend to his regular duties.

### Special Maintenance

In the spring of the year the surface of a gravel road, on account of frost and traffic, is usually somewhat rutted and does not conform to the cross-section to which it was constructed. If the spring maintenance is undertaken immediately after the snow leaves the traveled way, for two weeks the surface of the roadway is found to be plastic and can be reshaped without difficulty. A dollar spent at this time will accomplish more than three dollars can perform a month later. It is of first importance also that only at this time can material found in the road be properly graded, the heavier gravel placed at the base and the finer on the surface of the road.

TRUCK WITH SPRING BLADE FLOATING THE GRAVEL SURFACE IN THE NORTHERN DISTRICT OF MICHIGAN

In Nova Scotia our first step in the maintenance of a gravel road is to rip up the surfacing down to the subgrade. For this purpose we use our heavy construction machinery, which consists of 10-ton tractors and 12-foot blade graders. The road is brought back to its proper cross-section and is handed over to the patrolmen in perfect condition. By this method, the surface of the road is remade every year. The fine material is brought back to the surface and unevenness eliminated.

### Supply of Maintenance Material

The two most important factors in the maintenance of gravel roads are:

1. The addition of maintenance material
2. Intelligent grading

The gravel necessary for maintenance should be stock-piled along the right-of-way, and it will be found advantageous to have a year's supply ahead. This is necessary for the reason that additional gravel can best be applied in the spring and late fall, at which seasons hauling conditions are generally inferior. The kind of gravel to be used is an economic problem, the factors being durability and cost. It is understood, of course, that the material used must give satisfactory riding qualities. Extremely hard gravel does not make the best maintenance material. The ideal gravel for maintenance is one that is soft enough to break up sufficiently to supply fine material, but that is clean and will not produce mud and has sufficient hard material to leave a light coat of the free gravel on the surface.

No set rule can be laid down for the size of gravel. For extremely hard material 100 per cent should pass a ½-inch screen, while for fairly soft material, 100 per cent should pass a 1-inch screen. In many localities it is necessary to employ crushing and screening plants to produce satisfactory materials.

The amount of material which must be added yearly depends largely on the traffic carried and also on the quality of the surfacing. With a well-constructed roadbed carrying 600 to 700 vehicles per day, it will be found that on an average 200 cubic yards per mile will be replaced each year. There should always be a small reserve of gravel on the shoulders of the roadway, and sufficient width for that purpose must be provided at the time of construction.

### Scientific Maintenance Methods

The proper maintenance of a gravel-surfaced road calls for scientific methods; the rule-of-thumb methods of

Farmer Jones no longer apply. The old method of dragging the road from sides to center must give way to the method of grading from one side to the other. When this is done, the dragging will begin from the right side of the road and go to the left one day, and the following day the operation will be reversed. A large quantity of free gravel inconveniences the motorist. Such a coat of gravel is absolutely unnecessary, as only enough gravel need be placed on the road to provide material with which to "sweep" the road.

The roadway, regardless of weather conditions, should be dragged as often as necessary to retain a coat of free gravel and prevent ripples. This frequency depends not only on the volume of traffic, but also on the characteristics of the surfacing material. On an average, however, it is necessary to drag it after every 600 vehicles have passed over the road.

If road maintainers are operated at a speed in excess of 3 miles per hour, they will jump about and chatter, and, as a result, will leap over the humps, instead of cutting them off. It is therefore essential that maintainers be operated at a rate of speed not exceeding 3 miles per hour.

### Hauling Surfacing Materials

The material for surfacing can best be supplied by a floating gang with a fleet of light trucks, together with loading and screening equipment, and, if necessary, a crusher.

### Stone-Crushing Plants

It is not possible economically to produce fine maintenance material with the ordinary jaw or gyratory crusher. Special reduction crushers of both the jaw and gyratory types are now manufactured which will produce fine material at a reasonable cost. Where it is necessary to move the plant several times a year, the outfit should be portable. However, the efficiency of the plan should not be sacrificed to produce portability. Complete gravel-crushing and screening plants are now being manufactured.

### Equipment for Grading and Dragging

Considerable progress has been made in the past ten years in the development of road-working machinery. These improvements have extended to machinery for dragging or grading gravel roads, and it is generally admitted that such machinery has effected great economies. The first machine in the market was our old friend, the split-log drag. This gave way later to the light steel drag. When the maintenance of gravel roads became a full-time job, the light horse patrol grader, weighing about 700 pounds, made its appearance. These were found to be too light and were generally superseded by a horse patrol grader weighing approximately 1,300 pounds.

### Motorized Drags and Graders

Where heavy traffic existed, we found it practically impossible to maintain gravel roads satisfactorily with horse patrol graders. The manufacturers came to our aid, however, and placed on the market heavier motorized drags and blade graders. Of these machines, there are at least three types:

1. The blade grader with powerplant attached and either wheel or crawler traction
2. The blade grader pulled by a separate power unit
3. The various types of heavy multi-blade drags pulled by a separate power unit

Improvements in machinery follow behind improvements in road construction. At the present time practically all single-blade maintainers that have been put on the market have been adaptations of the road machine. The work they have to do is distinctly different, and they have therefore not been entirely satisfactory. If the blade grader is going to survive, it will have to be designed so as to better fulfill the requirements of the work it has to do. For example, if the blade of this grader is once raised in going over a bump, owing to its design, it is apt to repeat this inequality indefinitely. The result is a bumpy road. The multi-blade drag has not this drawback, and for this reason, as well as others, may possibly win out as the universal maintainer. It has the disadvantage, however, of being less easily controlled by the operator.

### Quality of Machinery

In the past much road machinery has been manufactured to a price rather than to a standard. This is the fault of the buyer, more than of the manufacturer. The manufacturer must sell in order to exist; he can therefore manufacture only what we will buy.

In purchasing maintenance machinery, we must first determine the type of machine we wish to buy; secondly, the particular make. The lowest-priced machine is not always the cheapest. What is needed is a machine that will do the work for which it is intended and do it continuously over a reasonable number of years. We should assure ourselves that the machine we are purchasing is not over-priced, but we should also be satisfied that it is the best machine of its type on the market. In road-making, expensive road machinery often spells economy.

Road maintainers have a tough job, and their design, material and workmanship should be the best possible. It is essential that repair parts and service be available at a reasonable cost.

### Cost of Operation

If a horse patrol, double team and driver, costs $6 per day to operate, the motor grader in these circumstances will not do the work any cheaper. It will, however, maintain a much better surface. With a traffic of 500 cars per day, a motor grader will maintain satisfactorily 24 miles of highway.

### Dust Preventives

The most serious disadvantage of gravel roads is the dust nuisance. This can be abated by the use of calcium chloride or light oils. Before either of these substances is applied, however, it is essential that the road surface be covered with ¾-inch of fine, clean gravel or crushed stone.

Calcium chloride should be applied moderately. If too much is applied at one time, it will form a crust that will necessitate scarifying in order to restore the riding qualities of the road. Only sufficient quantity should be applied to keep down the dust, and the roadway should be given as many applications as are necessary. One pound per square yard will be found about right for the first application—with about ½-pound per square yard for further application.

Light asphaltic oils of about 35 to 45 per cent asphaltic base have been used to a limited extent in Nova Scotia and have given satisfactory results as a dust layer. This oil should be put on in two applications with an interval of a month between. For the first application we use about 1/5-gallon per square yard, and for the second application, 1/8-gallon per square yard.

Our main objection to the use of light oils is our lack of storage and distributing equipment. For this reason we use calcium chloride, which requires practically no expensive equipment.

### Dust and Road Preservation

Dust abatement cannot be considered apart from road preservation. The blowing-away of fine material on the surface of a road is one of the principal factors in deterioration, so it follows that if the dust is prevented, a substantial contribution is being made to maintenance. Apart from the dust nuisance, the point in the traffic density curve where the use of a dust preventive is indicated as an economic factor in the road maintenance, must be determined by experimentation for different classes of road material. With an increasing traffic on certain highways, the use of a dust preventive will delay the necessity of constructing a hard-surfaced road.

## MICHIGAN STATE PRACTICE

By A. L. BURRIDGE
Division Engineer, State Highways Department, Cadillac, Mich.

The state gravel road system of northern Michigan, which compares with the provincial roads of Nova Scotia, constitutes a mileage of 1,600, only 250 miles of which are hard-surfaced, the remainder being gravel. Between 3,000 and 5,000 cars per day pass over these gravel roads in summer. To give the people satisfactory roads, it is necessary to carry on an intensive maintenance program.

Gravel as a material for surfacing highways is available for use in most of the states and provinces of the North American Continent. Undoubtedly, more miles of highways are surfaced with this material than with any other. Its cheapness and the fact that it can be found within an economic haul to many road construction projects demands its use.

### Kinds of Gravel

There are many different kinds of gravel, but there are few instances where this material with proper crushing and screening and with the addition of the proper amount of binding material cannot be used. The Michigan State Highway Department constructs two kinds of gravel-surfaced roads, the widths varying from 12 to 18 feet. The class "A" road is placed to a depth of 5 inches compacted, and consists of gravel passing through a 1-inch screen and containing 70 per cent pebbles. The class "B" road consists of two courses, the bottom course of 5 inches compacted gravel, and the top course of 3-inch compacted gravel.

As soon as the traffic on these gravel road surfaces reaches an average of 500 or more vehicles per day, we find it necessary to treat the road with some kind of dust layer or bituminous material. In the Northern District of Michigan the material used for this work consists of calcium chloride, refined tar, and cut-back asphalt. Where the traffic demands a pavement, we are using these gravel roads as a base and surfacing them with a 2-inch asphaltic concrete top, using about 500 tons of binder per mile to strengthen the edges and bring the old road to an even cross-section with a 2-inch crown.

It so happens that a considerable part of our trunk-line state roads were constructed by counties and townships from eight to fifteen years ago. It has been necessary for us in many cases to take these roads over and improve them with our maintenance organizations. As these roads in many cases were constructed from bank-run gravel which contained oversize stone and in most instances very little binder, it has been our problem to get these surfaces in condition for the traveling public. We felt that traffic was entitled to a smooth, even surface on all our trunk lines, and instead of making excuses that the road was old and worn-out and needed rebuilding, we went to work on these surfaces and put them in shape so that they could be used with comfort by those who wish to travel in our territory.

TRUCK AND DISTRIBUTOR AS USED BY MICHIGAN STATE HIGHWAY DEPARTMENT FOR APPLYING CALCIUM CHLORIDE

### Preparation for Surfacing

Before a road is treated with any surfacing material, it should be brought to an even cross-section, thoroughly consolidated, and the proper drainage established. We find that a crown of ¼-inch to the foot is sufficient. Excessive crown will concentrate traffic at the center of the road. Concentrated traffic makes ruts. Even distribution of traffic over the entire width of the road prolongs its life and cuts the maintenance costs many times. We have taken a traffic census on some of our 18-foot roads on which the traveled surface was divided into three 6-foot strips. We find that on a concrete road with a 2-inch crown, 51 per cent of the traffic uses the center 6 feet, and 24 per cent uses the outer 6-foot strip. On a 2-inch crown gravel, we find that 60 per cent of the traffic uses the center strip, and 20 per cent uses the outer 6-foot strip. On an 8-inch crown, we find that 66 per cent uses the center strip, and 17 per cent uses the outer two 6-foot strips. This investigation not only shows that crown will concentrate traffic, but it also teaches us that we need more intensive maintenance of the center of our road than we do on the edges.

Loose gravel also causes ruts and the concentration of traffic. This gravel should be bound up and consolidated into the surface. This can be done by adding clay evenly mixed to the loose gravel until the gravel contains from 8 to 12 per cent of the clay. We find that it takes an average of from ½ to 3 cubic yards of clay per 100 feet of road to furnish binder for this loose gravel. The amount of clay used depends upon the depth and kind of gravel. It is necessary that careful supervision be given this work, for an excess of clay is dangerous and in many cases will ruin the road. The safest way to place clay on the road is to spread it along each edge of the road and, when the clay is completely dry, thoroughly mix it into the gravel with a grader blade or harrow. I wish to lay special stress on the mixing of this clay, for if it is allowed to get into bunches it will have a tendency to flatten out and pancake on the surface of the road, which eventually will cause bumps and ruts and make the riding qualities of the surface very uneven and hard to maintain. After the traffic has used the road for a few days, if any loose gravel remains on the surface it should be bladed to the side and left there. A very light coat of buckshot or pea gravel can then be added, and the surface is ready for the calcium chloride treatment. Five tons of calcium chloride are then applied to every mile of road for the first application, and later in the season such additional amounts as may be required are applied to prevent the slightest occurrence of dust.

### Applying Calcium Chloride

We find it desirable from the public standpoint to treat all of our mileage at one time. This year we shipped 110 cars from the plant in three trainloads in one day, and three days later this chloride was all on the road and ready to be used by the public. In applying this chloride we use a 3½-ton truck to

which is attached the standard chloride spreader or drill. We find it desirable to have these drills equipped with pneumatic tires carrying a pressure of about 20 to 30 pounds. It is very desirable, in order to get the greatest benefit from the treatment, to have the calcium chloride evenly distributed upon the surface, and this equipment makes it possible to accomplish this purpose. The 3½-ton truck is kept supplied with chloride by smaller trucks which bring the material from the cars to the different points on the road where it is transferred from the smaller trucks to the distributor truck. After the calcium chloride has been on the road for one day, we immediately start floating the surface with a tractor grader or truck with spring-blade attachment. The road is first floated out, and the blade is so set that it cuts the surface just enough to eliminate any bumps that may have come into the road. This gives a very small ridge of calcium-chloride-treated material which can be floated back on the road within the next day or two or whenever it is necessary. As a rule we float the surface daily but we have found in some cases that it has not been necessary to float more than once a week when the road is carrying less than 1,000 vehicles per day, but we do insist that the patrolmen float their roads after each rain. They are instructed to bring in any of the loose material which might be on the edge of the road. The dead material that was originally floated out before the road was treated should never be touched or brought back onto the surface during the summer season, but it is desirable that this material be floated back on the road during the late fall and, if possible, consolidated into the surface.

### Bituminous Treatment

In surface-treating our roads with bituminous material, we prepare the surface in about the same way as we do for calcium chloride treatment. The only great difference is the fact that we can allow some oversize stone in the surface when the road is treated with bituminous material. After this surface has been thoroughly swept with a power broom, we apply about ¼-gallon of material to the square yard on the surface. This material is heated to a temperature of 100 degrees, is pumped into a pressure distributor mounted on a motor truck and is applied to the road. After this application has been allowed to lie on the road for two or three days until it has penetrated the surface, a second application is made of about ¼-gallon to the square yard, and this is covered with pea gravel or stone chips. We find it takes about 25 pounds of stone chips or pea gravel per square yard of road; but this will vary considerably, depending upon the roughness of the surface. After the stone chips have been placed, traffic can then use the road, but it is desirable whenever possible to keep the road closed for about two days, as this will eliminate any picking-up or smearing of cars with tar. As soon as traffic starts using our tar surface, we place a patrolman on this road and have him repair any depressions or places that might pick up in the road. We find that this is the time to do intensive maintenance work on this type of construction and by doing this the first two or three weeks that the road is used, it practically relieves us from any maintenance throughout the rest of the season.

A MICHIGAN GRAVEL ROAD PREPARED FOR SURFACE TREATMENT WITH EITHER TAR OR CALCIUM CHLORIDE

### Hot Tar Treatment

The next year after this treatment has been made, we put on a hot treatment of about ¼-gallon per square yard, and place the necessary stone chips or pea gravel to absorb any tar which remains on the surface, and then the road is in a condition to give service from three to five years without any more treatment. This treatment is being used on the roads that carry from 1,000 to 3,000 vehicles a day during the tourist season. Where the traffic has exceeded this amount, we are placing a 2-inch asphalt top with the necessary binder course, which runs about 500 tons to the mile. If the gravel surface has not been previously treated with bituminous material, the surface is brought to about 3-inch cross-section and treated with from ¼- to ⅓-gallon of material per square yard of road. The black base is then placed to a width of 19 feet and it is used to strengthen the edges and take out any depressions on the road surface. We then place upon this a 2-inch asphalt top, 18 feet wide. This top material and binder is prepared in the usual types of asphalt plants and is transported to the road by 3½-ton trucks. The top is laid in the usual method that governs the placing of all sheet-asphalt surface. The average cost of these three types of resurfacing varies considerably, and their use is governed more or less by the traffic and the condition of the road.

### Cost of Surfacing Materials

Calcium chloride costs us about $30 per ton, applied on the road. In case a 10-ton application is necessary, this work would cost about $300 per mile. The first year's bituminous treatment costs us from $1,000 to $1,200 per mile, and the second year about $500 per mile. The 2-inch asphalt concrete top, 18 feet wide, is costing between $8,000 to $10,000 per mile, and the black base is costing about $3,000 to $4,000 per mile, making the total cost for this surface about $13,000.

### Organization for Efficiency

The methods I have described have been successfully used in the Northern District of Michigan for the last two or three years, and the most important factor in their success has been the personnel of the organization that has accomplished this work. As engineers, we spend a great deal of time in the inspection of materials and in theories of doing work, but you seldom hear much discussion on organization or personnel.

A road-building organization must consist of men who are fitted to perform efficiently the different tasks to which they are assigned. Road building is a business which demands trained, execu-

tive ability to direct it, and skilled, efficient laborers to perform the many duties which enter into the construction program. All the personnel of this organization should feel secure in their positions as long as they perform their duties in an efficient and satisfactory manner. Political preference should not be allowed to enter into any such organization, and a man should hold his position only as long as he is able to "produce the goods."

The executive end of this organization should make every man feel that he is a necessary part and that the duties he is performing are important. Pride and interest in the work should be cultivated and, wherever possible, full-time employment should be given so that the efficiency of the organization will continue from year to year. The greatest waste of the taxpayer's money has not occurred so much through dishonesty as it has through inefficiency, and I believe it is important that those in charge of road-building operations should give this matter much more serious thought and attention.

ACKNOWLEDGMENT.—Prepared from papers presented before the Canadian Good Roads Association.

# German Developments in Refuse Disposal

*By* JOHN H. D. BLANKE

ONE of the greatest problems that face many municipalities is the development of adequate money-saving and money-earning methods of refuse disposal. The British have improved their methods constantly and considerably ever since 1875. On the European Continent the scientific methods for the disposal of refuse were adapted or developed much later; not until 1893 was such a method applied in Hamburg, when cholera raged in that city.

According to Otto Uhde, Hamburg, writing in the *"Zeitschrift des Vereines Deutscher Ingenieure,"* September 3, 1927, paragraphs 1257-1262, British refuse has as a rule an average heating value of 5,454 to 7,272 thermal units per pound, and the refuse on the Continent a heating value of 2,182 to 2,727 thermal units per pound, or less. Therefore, the British hearth furnaces were not so successful on the Continent, for in many German cities a supplementary fuel had to be added to burn the refuse. The British hearth furnace operates with a thin layer of fuel and with a grate load of about 41 pounds of refuse per square foot, which corresponds to an approximate heat output of 218,000 to 291,000 thermal units per hour when burning British refuse and from 72,700 to 109,000 thermal units per hour per square foot when burning German refuse.

Consequently, the German engineers first developed—perhaps because of the experiences at Hamburg—the shaft furnace in which a heavy layer of refuse is burned. Higher grate loads and greater specific heat outputs were expected. The experimental plants at Hamburg and elsewhere met with success, so that the burning of refuse in German cities received more active interest. Various designs of the shaft type of furnace were developed and installed. The largest installation of this design is the refuse destructor Alter Teichweg in Hamburg, installed in 1911.

### Improvements Since 1918

Developments in refuse destructors received a setback during the World War. At that time and after the war the refuse had a lower fuel value due to the greater economies which became necessary, and to the more extensive use of pressed brown coal in the German houshold. Before the war the refuse was destroyed merely for sanitary reasons, but now a certain degree of economy is expected of a refuse destructor plant. Efforts were started and are under way to utilize the refuse for generating steam and to sell the by-products of the burned refuse, as shown later in the article, along with an improvement in furnace design. Two developments are noted in this direction.

In one development a high-capacity feeding stair grate is used in burning the refuse. It was tested first in the well-designed refuse destructor plant in Berlin-Schoeneberg in 1920. This grate did not meet expectations, especially with the winter refuse, which is rich in brown coal ashes; for the necessary horizontal travel of the fire could not be maintained successfully with the low-grade refuse.

Another development continued from the proven shaft furnace, the increase in grate load being effected by removing the combustion residues from the furnace hearth with machinery. It met with special success at the refuse destructor plant Alter Teichweg in Hamburg and therefore deserves more detailed consideration, as it paves the way for better refuse destruction. The cross-section of the plant, in Fig. 1, shows a furnace unit in combination with a single

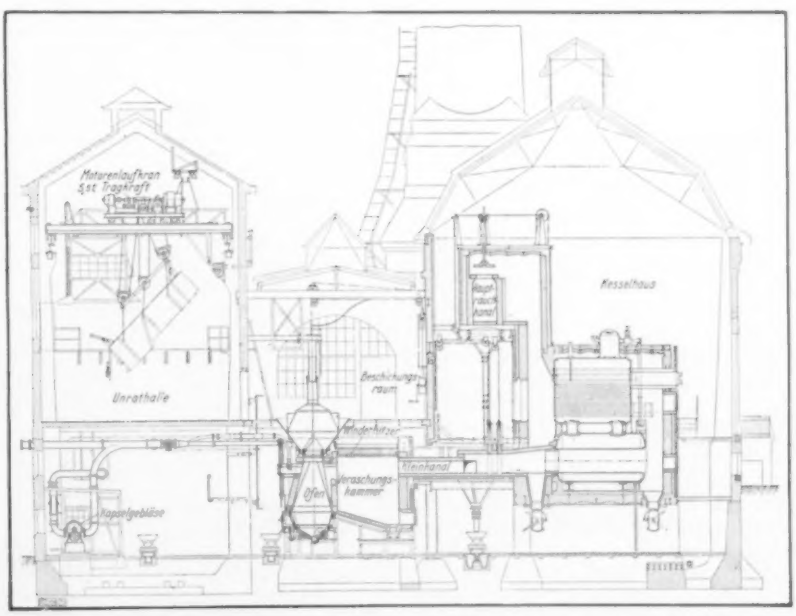
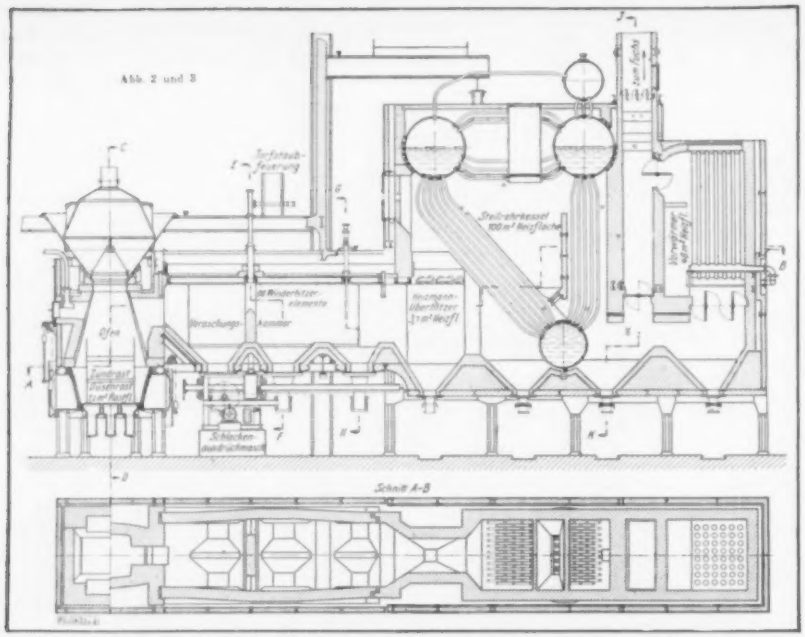



**FIG. 1. THE REFUSE DESTRUCTOR PLANT, ALTER TEICHWEG, IN HAMBURG**

**This shows the Motorenlaufkran 5.5t Tragkraft or motor traveling crane of 5.5 tons capacity; Kesselhaus, or boiler plant; Unrathalle, or refuse compartment; Kapselgebläse, or capsule blower; Beschickungsraum, or feeding-chamber; Ofen, or furnace; Veraschungskammer, or ashing-chamber; Kleinkanal, or small tunnel, and Hauptrauchkanal, or main flue chamber**



FIGS. 2 AND 3. THE SHAFT FURNACE AT ALTER TEICHWEG IN 1925

**Second A-B shows the Ofen,or furnace; Torfstaubfeuerung, or powdered peat firing chamber; zum Fuchs, opening to the flue; Vorwaermer, preheater of 517 square feet heating surface; Steilrohrkessel, vertical tube boiler of 1,076 square feet heating surface; Heizmann Ueberhitzer, or Heizmann superheater, of 40 square feet heating surface; 80 Winderhitzerelemente, or 80 air heater elements; Veraschungskammer, or clinkering chamber; Schlackenausdrueckmasch, or slack or residue remover; Zuendrast Duesenrost, or ignition arch nozzle grate, of 13 square feet heating surface**

fire tube boiler. There are twelve such furnace units placed side by side, of which only four are equipped with this type of boiler.

In 1925 one of these furnace units, which was not equipped with a boiler, was replaced with a furnace provided with an expulsion machine or grate residue remover such as used in larger sizes in the coke ovens. This furnace was also equipped with a vertical tube boiler as shown in Figs. 2 to 7. Except for the residue remover and the boiler, this unit is similar to and operates like the other furnace units. Since the residue remover removes all residue from the grates, the new load of refuse which enters on the grates must be ignited in either of two ways: the furnace may be provided with side walls having niche-shaped surfaces in which part of the burning refuse is retained when the grates are cleaned, in order to ignite the load; or, when the residue is drawn out through the furnace throat, a device can be made to retain a certain quantity of the glowing slack, which is then, with the device, returned onto the grate by the shield of the refuse remover to ignite the new load of refuse. The latter method has proved more successful than the former.

The furnace has operated since January, 1926. The flue gas conditions between the furnace and the boiler are quite uniform. While the other furnace units handle 30 tons of refuse per 24 hours, this new furnace unit handles 80 tons per 24 hours. The capacity of the furnace varies with the volume-weight of the refuse. Much greater output could be secured if the refuse-handling equipment were of larger capacity. The grate-surface area, which is now 13 square feet, could be doubled easily, so that the furnace could handle up to 200 tons of refuse in 24 hours.

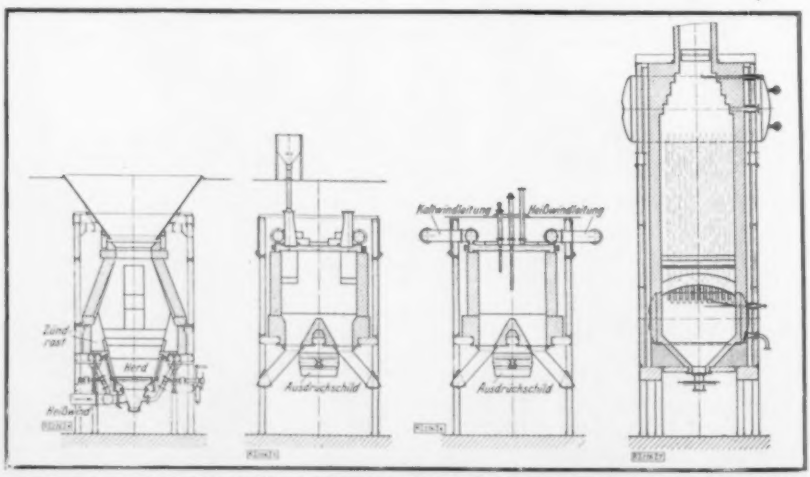
### New Incinerator with Larger Grate Area

Backed by the experiences thus obtained, the Lurgi Gesellschaft fuer Waermetechnik designed the refuse destructor Type Inferno shown in Figs. 8 to 11. The shaft furnace is designed like the others except that the grate-surface area is 27 square feet and the slack-forming zone is fitted with a water-cooled iron surface covered with a stone layer. The nozzle grate plate is supplied with refuse from two feeds located at two sides of the furnace.

The refuse is delivered to the plant in drums of 353 cubic feet volume which are lifted from the trucks and their contents dumped into a bunker and then handled further as shown in the illustrations Figs. 8 to 11. The refuse is fed into the shaft furnace in horizontal layers to a depth of 3 to 5 feet; it is ignited by the glowing residue on the grate. After each filling of the shaft, a capsule blower forces highly preheated air into the refuse, thereby facilitating combustion. The vibrating or oscillating motion of the blower aids in separating the finer particles of the refuse and those which melt with difficulty, and discharges them into the ash chamber. This leaves only the coarse refuse and the easily melting finer particles for combustion; it assures the formation of a clean clinker.

The air heater is located in the ceiling of the ash chamber and consists of a number of beam-shaped, cast iron parts which overbridge the chamber. Forged iron tubes are cast into the cast iron bodies, through which the combustion air is passed. This design keeps clean easily and is a good storer of heat. From an air pressure of 400 to 500 mm. at the start of each filling, the force of the blower is reduced to 300 to 350 mm. The fine particles of refuse in the ash chamber which do not melt readily thus start to glow and the heat is absorbed in the air heater above them.

With the refuse available on the Con-



FIGS. 4-7. SHOWING VARIOUS SECTIONS OF THE ALTER TEICHWEG INCINERATOR AT HAMBURG

**Reading from left to right, Fig. 4, Sections C-D, viewed from the front, showing Zuendrast or ignition grate, Herd or furnace, and Heisswind or hot air. Fig. 5, Section E-F, viewed from the rear, showing the Ausdruckschild, or clinkering shield. Fig. 6, Section G-H, viewed from the rear, showing the Kaltwindleitung, or cold-air duct, and the Heisswindleitung, or hot-air duct. Fig. 7, Section J-K viewed from the rear**

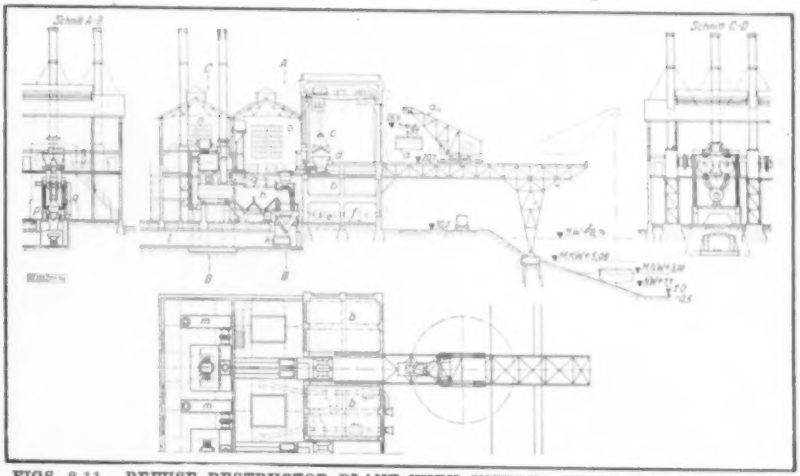
tinent, the combustion process lasts about 20 minutes. The residue sinters to a more or less hard, porous slack. The end of a combustion cycle is indicated by the carbon dioxide content of the flue gases and the formation of a slack cake about 16 to 20 inches deep. The grates are then cleaned with the residue remover and part of the glowing slack returned for ignition. The slack amounts to about 45 to 50 per cent of the weight of the refuse. Part of its heat is absorbed in the air heater, and then the slack is delivered to a storage chamber, but first wetted if necessary. While the plant operates twenty-four hours a day, the slack crusher and sifter operates only eight hours. This permits proper seasoning of the slack.

The flue gases pass through the ashing chamber, where they burn further, an air nozzle having been provided for this purpose opposite the fire arch. Then the flue gases pass successively through a fire-tube boiler, a flue chamber with steam superheater, two horizontal flue tube boilers, a second flue chamber, electric filter and chimney. In this travel the flue gases are cleaned of the coarse and then the finer particles of ash, the latter being retained in places from whence they are withdrawn by compressed air. Each furnace has its own blower and chimney, and the entire unit, including boilers, is easily cleaned. The plant is easily adaptable to changing load because of the unit design. If the fuel content of the refuse is too low, supplementary powdered peat fuel or oil firing may be installed to heat the combustion air in the air heater.

**Operating Costs**

The operating costs of the refuse destructor are covered by the sale of the by-products. The plant reclaims the refuse as follows: 45 to 50 per cent slack; 1 per cent old iron; 0.7 per cent magnetic slack; 5 to 20 per cent flying ash; 0.55 to 3.3 pounds steam per pound of refuse; 353 to 530 cubic feet of hot water at 122 degrees F. in one hour from one furnace unit.

The broken and sifted slack makes an excellent road-building and raw concrete material. It results in a very tough, sound-dampening concrete which is noted for small expansion and small weight per volume. It requires less cement than a concrete made of gravel or broken stone, of the same compressive strength. The old iron is easily sold, while at the present no good use has been found for the magnetic slack. The flying ash is good material for improving soil conditions and for filling, and it can be used in making stone and for other purposes. The steam and hot water can be used as deemed best for local conditions. It may be sold to central stations, municipal or industrial plants or used otherwise. If possible, the refuse delivered to the plant should be improved by collecting refuse at industrial and trade plants, including slack at central stations, gas works, casting plants, etc., provided this can be obtained free of charge.



**FIGS. 8-11. REFUSE DESTRUCTOR PLANT WITH INFERNO FURNACE OF 27 SQUARE FEET GRATE AREA**

**a, 353-cubic-foot refuse tank; a-1, semi-portal turning crane; b, refuse bunker; c, catcher; d, feeding-car; e, rotating capsule blower; f, sound damper; g, air heater; h, ashing or clinkering chamber; i, residue remover; k, slack conveyor; l, slack tunnel; m, electric gas filter; n, boiler-house; o, furnace-house; p, furnace; q, ignition arch**

# Cross-Connections Again Responsible for Typhoid

*Three Recent Examples of Epidemics Resulting from Illegal Connections Between Potable and Polluted Waters*

IN October and November, 1927, three outbreaks of typhoid fever occurred in New York State, all presumably the result of illegal cross-connections between public water-supplies and pipes carrying polluted waters.

The largest outbreak was in the city of Cohoes. Here forty-seven cases of typhoid fever occurred. Two of these were contact cases, but for the rest there was nothing apparently in common except the city water-supply. All the cases were in one section of the city, and investigation revealed in an industrial plant a defective cross-connection, between the public water-supply and water from the Mohawk River, into which untreated sewage from Schenectady enters.

Examination showed evidences of pollution of the water in the public mains in the affected section, while subsequent to the elimination of the suspected cross-connection and thorough flushing of the mains there was a marked reduction in the total bacterial count and absence of B. coli which had been found previously. Furthermore, statements were made by residents in the locality that they had noticed turbidity of the water some time previous to the appearance of the typhoid cases. On the other hand, no evidence of pollution was found at any time elsewhere in the city.

Another outbreak of typhoid fever occurred in the northern part of the city of Albany. More than 30 cases were reported from this vicinity and three more were found in other sections of the city; no connection between the two groups has been discovered, although further investigation may reveal it.

The history of this outbreak is interesting, as it is quite typical of a water-borne outbreak. On October 14 there was reported to the local health bureau an extensive outbreak of diarrhea apparently confined largely to the employees of two factories and the children attending one school in the northern end of the city. At this time examination of the public water-supply of Albany showed pollution in the northern part of the city, while elsewhere there was no evidence of it. Investigation in the affected area revealed three illegal cross-connections between the city water-supply and polluted waters, one connecting raw Hudson River water with the filtered and chlorinated public supply. After the cross-connections had been eliminated and the water-mains thoroughly flushed, there was prompt improvement in the sanitary quality of the water as shown by subsequent examinations. On October 22 the first case of typhoid fever had its onset and within the week following seven others in the same area.

A third outbreak of typhoid fever, probably due to cross-connecting potable and polluted water-supplies, consisted of 9 cases and occurred in a factory in the city of Oswego. The drinking water was the same as the city water plus water from a deep drilled well, while the water for fire-protection purposes came from the heavily polluted Oswego harbor. Here again there was a preliminary outbreak of diarrhea. Water from the drinking supply was shown to be polluted, while after the removal of the cross-connection no evidence of contamination of the drinking water was found.

# Walter Prichard Eaton Deplores Turning of New England Roadsides Into Offensive Slums

*"WE are, in a good many places, doing everything in our power to spoil everything that has made New England unique; to destroy our true civilization for the horrible rubber-stamp variety common to the rest of the country.*

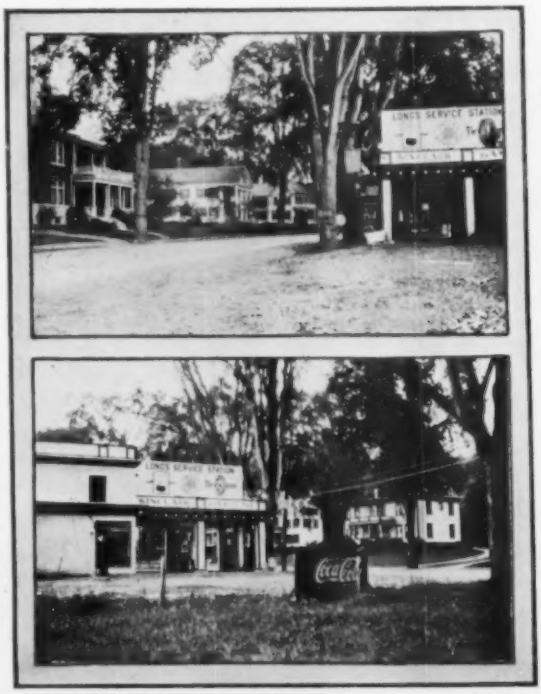
*"We are allowing fine old highways going through some of the most beautiful country in America to become so cluttered with ugly signs, cheap stands, and the general mess and squalor of a typical modern American highway, that the visitor might almost as well be going through the Jersey meadows as through the Vermont hills."*

It was as a passionate lover of the soil that has bred him, a zealous treasurer of the traditions which lend distinction to his section in the eyes of the whole of America—and the world—that Walter Prichard Eaton, author and lecturer, recently plead with his fellow New Englanders to help stop the wholesale devastation now in progress. The occasion was the New England Conference, at Springfield, Mass. He sketched vivid, high-light word-pictures of the irreplaceable beauties being ruthlessly destroyed, of the "visible records of an honorable past," being speedily obliterated. He spoke late, following Mr. Hoover's flood address. Through a misunderstanding a good part of the large audience had already gone. But it is reported that when he had finished, his hearers, almost to a man, crowded to the platform and lingered there discussing approaches to this problem as unforgettably outlined.

Mr. Eaton said in part:

"The typical New England didn't just grow. It was planned. Those great trees were planted carefully. Many of the houses were built at least a hundred years ago in the fine old style we are beginning again to appreciate after a century of bad taste. Everything is neat, well-ordered, dignified, restful. For a hundred years, at least, as the most casual observer can see at a glance, self-respecting people have dwelt here who knew how they wanted to live, took pride in their town, created a human environment of peculiar charm which inevitably fitted into the surrounding scene, hills, and valleys and seacoast, as restfully as an old English village into the English landscape. . . And not only the towns. Out through the country, all up and down New England, the farmhouses and their grey barns, the tiny hamlet with the church spire on a hill, fit into the picture, give to the scene a warm, human note without detracting from the natural beauty. . .

"That is—or was—New England. Our ancestors not only subdued the wilderness, they actually conquered it. They created out of it an environment they desired, and turned out a finished product, neat, gracious, lovely to look upon, restful to dwell in. They made civilized use of the land. They didn't spoil it, they enhanced it. That was the heritage they left us."




**THE GAS STATION INVASION WHICH MR. EATON DEPLORES REACHES A RESIDENCE SECTION OF BEAUTIFUL MONTPELIER, VERMONT**

**Absence of zoning laws in Vermont renders municipal officials powerless to cope with this phase of the problem**

And what is it that present-day New England, "gone a little mad on the subject of advertising, interested in bringing in the whole country to buy hot dogs in the White Mountains"—what is it they are doing to all this?

### Turning the Roadsides Into Slums

"Consider the Post Road from the Berkshires to Boston, or the turnpike from Boston to Portland, or almost any through highway dedicated in large measure to tourist traffic. Such roads run through lovely country. But what, actually, are they today? They are motor slums. . . The road from Boston to Portland is a dirty slum of more than a hundred miles. So is the Springfield-Boston Road. So are many others. Property values have depreciated along them in many cases. . . . They represent the worst features of city life spewed out over the countryside. They are a serious detriment to the continued prosperity of New England as a summer resort because they are steadily destroying deeper and deeper into the country and the villages, the charm, the neatness, the ordered dignity and the beauty which was our priceless heritage.

### "Entertaining" Unworthily

"As yet, we have made no worthy effort to provide entertainment for tourists. . . Of the smaller, cheaper inns and restaurants along our lines of travel which are neat, clean, attractive, New England in style and atmosphere, worthy of our heritage, we have precious few. We have left the entertainment of the hordes our advertisements have attracted to the hot dog men, the folks along the road who hang out signs appropriately labeled: 'Tourists taken in,' and even to those terrible places, municipal or private camp grounds. Even in the great open spaces of the West, motor camp grounds are disgusting. There is no place whatever for them in New England. If we can't do better by ourselves and our visitors than these roadside abominations, we had better shut up shop. . . . We need, and need badly, moderately priced inns and restaurants . . . and the kind of people who still prefer to camp beside a privy alongside the road, we don't want in New England at all.

### What's to Be Done

"There are a few towns in New England which have jealously guarded their heritage . . . and they have the highest property today, the most enviable publicity, the fewest empty cottages. . . . But the finest and most effective advertising New England could have would be the simple news story carried (as it would be) in every paper in the land, that there was a paved highway from Long Island to the Canadian border without an advertising sign or a cheap filling-station or a hot dog kennel upon it; but garages in the towns, neat, clean, reasonable hotels at reasonable intervals, attractive tearooms in nice old houses, filling-stations, well-built and conducted by the oil companies at intervals, and, for the rest, the lovely old country left as it was. . . . You couldn't keep tourists off that road with a nest of machine guns."

# Bringing Order Out of Chaos in Street Naming and House Numbering

*How the Great Borough of Queens, New York City, Composed of Sixty Former Villages, Changed the Names of Most of Its Streets and Gave New Numbers to All of Its Houses*

By CHARLES U. POWELL

Engineer in Charge, Topographical Bureau, Borough of Queens

WHAT would happen in an American city of the size of Boston, if the authorities should pass an ordinance changing the names of most of the streets and assigning new numbers to all of the houses? It would, perhaps, precipitate a riot, or even necessitate a special act of the Legislature to put the new system into effect; and yet such a change was actually brought about in the borough of Queens, which contains a population larger than that of Boston, and covers nearly as much land as does the city of Philadelphia.

The borough of Queens with its 117 square miles of land area is the largest in extent of the five boroughs comprising the city of New York. Queens, with its million-odd inhabitants, also surpasses the other boroughs in its rapidity of growth, as is shown by its five-fold increase in population, and its thirteen-fold increase in the assessable value of its realty, to a present total of $1,850,000,000 during the past twenty-five years.

The problem of naming the streets and numbering the houses was made more difficult by the fact that the territory was formerly occupied by about 60 villages, each having its own separate system of street names and house numbers. These villages were connected by country roads. Only in two sections was there continuity in the street plan.

In 1911, when Maurice E. Connolly was first elected President of Queens Borough, he directed the Topographical Bureau to make a thorough study of the problem of connecting these divergent street systems, of widening and straightening the old highways, and of assigning to the streets appropriate names, such as would be a clue to the portion of the borough in which the highway was located. Duplication of street names also had become by that time a serious source of annoyance, particularly to the post-office authorities. When the various villages included within Queens Borough were separate communities, it did not matter particularly whether or not there was a Main Street in Jamaica, and another Main Street in Flushing. By 1911, when these various subdivisions of the borough were being mapped together into one street system, it was clear that some plan must be developed to substitute new names for all but one of the ten different highways called Main Street in as many different parts of the borough; or that would reduce by 29 the 30-odd streets and avenues named after President Washington.

THE PHILADELPHIA SYSTEM OF HOUSE NUMBERS IS USED. FOR EXAMPLE: 104-25 89TH AVE. IS LOCATED ON THE NORTH SIDE OF 89TH AVE. ABOUT 240 FT. EAST OF 104TH ST. ON THE RICHMOND HILL SECTION, ODD NUMBERS APPEARING ON EAST SIDE OF STREETS AND NORTH SIDE OF AVENUES.

In working out a logical system that would be descriptive of the locality in which the street was situated, and at the same time would avoid such repetitions of names, the Topographical Bureau was confronted with the necessity of changing the names of about 75 per cent of all streets.

The change consisted in the adoption of a system of numbering in which the term "Avenue" was used to designate highways running east and west, while the word "Street" was employed for those going north and south, or at right angles to the avenues. Streets were numbered consecutively, starting with First Street and ending with 271st Street. The avenues were also numbered serially, starting with First Avenue and ending with 162nd Avenue.

### Overcoming Opposition of Old-Time Residents

When such a radical change was first proposed, it naturally met with much opposition. Most of the old-time residents of the 60-odd villages and towns were horrified. Some of the streets had been named as long ago as had Boston's Common, or Philadelphia's Broad Street. Hence, streets and houses were at first renamed or renumbered on paper only. The next step was to provide street signs with the new names for the outlying portions of the borough, which were then being developed, and to assign house numbers for such developments in accordance with the new system. The old built-up sections were avoided, until they became surrounded with newly built-up areas, containing streets showing the new names at the corners, and houses numbered in accordance with the modern system. All the new buildings that were erected within the older sections, such as Jamaica and Flushing, were also provided with the new numbers, and these finally so altered the character of the former villages that the evolution from the old to the new system at last became complete. Today, comparatively few of the older buildings carry the former numbers, and these are rapidly being demolished.

One reason for adopting the new system is that it enables the stranger to visualize the location of any street or avenue by its number, a low number indicating that a street is in the western portion of the borough, while a number in the 200's would be to the east of Hollis or Flushing. Similarly, in the case of the avenues, a low-numbered avenue

would be in the northern part of the borough, while a number above 100 would be south of the Atlantic Avenue Division of the Long Island Railroad, or in the vicinity of Jamaica Bay. In the Rockaways the system differs in that the lowest-numbered street is adjacent to the Nassau County line; while the numbers increase consecutively, until the highest number is reached at Rockaway Point, near the western end of the peninsula. To avoid confusion with the system in the main portion of the borough, the numbered streets in Rockaway are preceded by the word "Beach," an abbreviation for Rockaway Beach; thus we have Beach 2nd Street in Far Rockaway; Beach 75th Street in Hammels, Beach 116th Street in Rockaway Park, etc.

In the welding-together of many communities, such as Flushing, Corona, Jamaica, Long Island City, etc., each having its own street system, into one homogeneous whole, it frequently happens, where two different street systems come together, that there is found to be one or more short streets, spaced between two consecutively numbered streets, that must be given a name. Thus, if a single street should fall between 20th and 21st avenues, so that it is impossible to designate them by numbers. Some have historic names, or are identified with the names of the former villages in the borough, such as Fresh Pond Road or Jamaica Avenue. Others have been called after the founder of a great industry, like Steinway Avenue. These old names have been retained whenever it has been possible to do so without conflicting with the system. Where a thoroughfare is sufficiently broad or important, it is called a "Boulevard," and boulevards can run either north and south, like the streets; or east and west like the avenues, or can cut diagonally across both streets and avenues.

Street names can be amended only by a resolution of the Board of Aldermen, according to Section 50 of the Greater New York Revised Charter, between the first of December in any year and the first of May in the next following year.

The present system of numbering streets throughout Queens Borough was given official recognition in 1915, when the Richmond Hill map was approved by the Board of Aldermen. This was followed by the Flushing and Far Rockaway maps in 1916; the Bayside map in 1917; Jamaica and Queens Village in

TYPE OF STREET SIGN ADOPTED AS STANDARD FOR BOROUGH OF QUEENS

Streets, it would be called 20th Place; if two streets should be left in this way, the first would be designated as 20th Place, and the second as 20th Lane. A similar system is used in the case of avenues, or highways running east and west; but in this instance, in order to avoid confusion, the terms "Road" and "Drive" are employed instead of "Place" and "Lane." In some localities short curved streets have also been projected, as in Forest Hills, Douglaston, etc.; these are called "Terraces" or "Crescents."

Again, there are important traffic arteries, the names of which have long since become household words in the borough, such as Jericho Turnpike and the Merrick Road. Many of these thoroughfares are winding, or extend diagonally across the numbered streets and

1919; and by the approval of new street names for Rockaway Beach in 1920; Corona and Hollis in 1921 and 1922; Ridgewood, Maspeth and Long Island City in 1925; and Springfield and the southerly portion of the borough in 1926.

The new system of house numbering in the borough was first applied to the Ridgewood section, as shown on a map proposed by the Topographical Bureau in 1908. This was because Ridgewood, owing to its location with reference to Brooklyn, and to the rapid-transit facilities, already in use at that time, was the portion of the borough that was first intensively developed, and which assimilated the first wave of immigration that was later to spread out over the entire borough. It was not, however, until three years later, in 1911, that significant progress was made in the task of renumbering houses. A further impetus was given in 1915, when the Richmond Hill map was completed; and by 1925, when the system had been extended to Long Island City, the new numbers had come into general use.

### Cooperation from the Building Department

One force that materially helped in carrying out this great undertaking was the support of the Borough Building Department, in withholding permits for new buildings until the builders had first obtained the new numbers from the Topographical Bureau. Great assistance was also rendered by the public utility corporations, such as the telephone and gas companies, in withholding service until the applicant had first obtained his proper house number. The local newspapers also, without regard to politics, rendered hearty support to the change; and of course the postal authorities were in full accord with the new system, and in numerous instances notified householders that they would not be responsible for the delivery of mail unless the owner should put up the proper number. Dealers in house-number plates sprang up, as it were, overnight, and by going about from house to house soliciting orders gave further impetus to the adoption of the new numbers. At one time there were so many dealers in the field, soliciting orders for house number plates, that their activities had to be curbed by the Topographical Bureau as being oppressive.

The motive back of cooperation on the part of public and of quasi-public corporations and societies, which the Topographical Bureau has received, in extending the new system of street and house numbering throughout the borough, may be regarded as due in part to public spirit, and in part to enlightened self-interest. For example, it is of great advantage to the gas, electric light, and telephone corporations that there should be, for instance, only one No. 1 Washington Street, instead of thirty.

One illustration will show the value of the new system to the stranger—and a resident of one of the former villages in Queens may be as much of a stranger in another part of the borough as would be a newcomer from a western state. Occasionally the Topographical Bureau receives a telephone request from a newspaper man asking the number of a street which corresponds to a certain former name. Perhaps the editors had been notified of occurrences having news value, near the corner of, say, "Washington and Grove Streets," names which when translated to signify the corner of 160th Street and 90th Avenue, enabled the reporter to spot the place as in the Jamaica District, easily reached by the Long Island Railroad.

### Signs Indicate Street Numbers and House Numbers

In order that a house number may be of greatest value in indicating the location of the premises, the number is divided into two parts, separated by a dash, in which the first part of the number is the same as that of the nearest cross-street or avenue, intersecting the avenue or street to the west or north, and the second part of the number represents the distance, as expressed in lot intervals, between such corner and the house, a number being assigned for each 20-foot space. Odd numbers are assigned

to buildings on the north sides of avenues and the east sides of streets, while even numbers are used for houses on the south sides of avenues and the west sides of streets; in which the term "street" is used to designate all thoroughfares running north and south, and "avenue" is employed for thoroughfares running east and west or at right angles to the streets.

For instance, if a house is on 30th Avenue, between 25th and 26th Streets, the first part of the number would be 25. If the house is on the north side of 30th Avenue, and is at the corner of 25th Street, the second part of the number would be 01; if on the south side of 30th Avenue and at the corner of 25th Street, the second part of the number would be 02. That is to say, the first-mentioned house would be called 25-01, 30th Avenue, indicating that it was on 30th Avenue and occupied the lot space adjacent to 25th Street, in the block between 25th and 26th Streets, and was on the north side of the avenue. As another illustration, take the number 125-42, 221st Street. Such a house would be situated on 221st Street, in the block between 125th and 126th Avenues, because the first part of the number is 125. It would be on the west side of 221st Street, because 42 is an even number. Dividing 42 by 2, because half of the lots would be on the west side and half on the east side of the street, gives 21, the number of lots between the house and 125th Avenue. As a space of 20 feet is allowed for each lot, the distance of the house from 125th Avenue would be 21 x 20, or 420, feet.

That is to say, the number 125-42, 221st Street, would be a complete description of the location of a house, and could apply to only one position in the entire borough. Since the number assigned to a house is based entirely on its location, it follows that when houses occupy plots wider than 20 feet it is necessary to skip over one or more numbers.

The value of the numerical system of street and house numbers, like that of the Weather Bureau, cannot readily be estimated in terms of dollars and cents. In expediting and preventing mistakes in the delivery of mail and merchandise, the system has an economic value which is obvious. The number of a house being an index to its location, strangers find their way about with a minimum of effort; physicians, summoned from a distance, reach the bedside of their patients without delay; the work of the Police and Fire Departments is speeded up where the time element is of prime importance. The entire fabric of social and economic life within the borough, as well as its contacts with the outer world, is strengthened by a system of street and house numbers that opens the gates to all.

# The Policeman as a Community Advertiser

"HEY, there! Why the blank don't you watch where you are going?" Chambers of commerce and municipal officials who have been eagerly looking for effective and lasting ways of advertising their cities may have been neglecting one of the greatest potential advertising mediums in existence in the person of the policeman at the corner. His effect on visitors must be either good or bad, according to William Ullman, who, in an article headed "Courteous Police Force Excellent City Advertising Medium," in a recent issue of *Motordom*, says:

"Luncheon-meeting spellbinders may exhaust their lung power, and dozens of print shops may be kept engaged overtime turning out bright-hued pamphlets explaining, picturing, and lauding . . . public buildings, parks, water-supply, or industrial activity, and yet this feverish endeavor will avail nothing if an irate and obnoxious personality is stationed in the main square to heap insult and injury upon the transient motorist."

Mr. Ullman tells of a southern Virginia city which prides itself upon the gentlemanliness of its policemen.

"If one stops to ask for directions and has women in the car, the officer will approach cap in hand. The members of this Department have instructions in case the destination requires several turns, to ask permission to ride on the running-board and go with the car."

But courtesy on the part of policemen is not confined to the Southland. The writer tells of a motorist in a large New England city who attempted to make a left-hand turn behind the officer, but failed to complete the turn without having to back up. Expecting a sharp reproof, he was surprised to have the officer smile: "In this state, all turns are made in front of the officer!" But perhaps the acme of politeness in policemen, as recounted in the article, was embodied in the officer in a great city who, seeing two frightened-looking pedestrians who had misinterpreted the signal lights and were stranded between two panic-inciting streams of traffic, went to the rescue apologizing: "If I'd seen you sooner, I'd have stopped the traffic."

"That policeman then and there did some missionary work in behalf of his city in which every organization within the borders might have failed. Certainly they could not have instilled a more kindly feeling. In sharp contrast . . . might be cited cases, all too numerous, of rude and at times insulting conduct on the part of the police of various cities. They are not typical even of the departments to which they belong, but it is unfortunate, to say the least, that municipalities must harbor them as obstacles to progress. . . ."

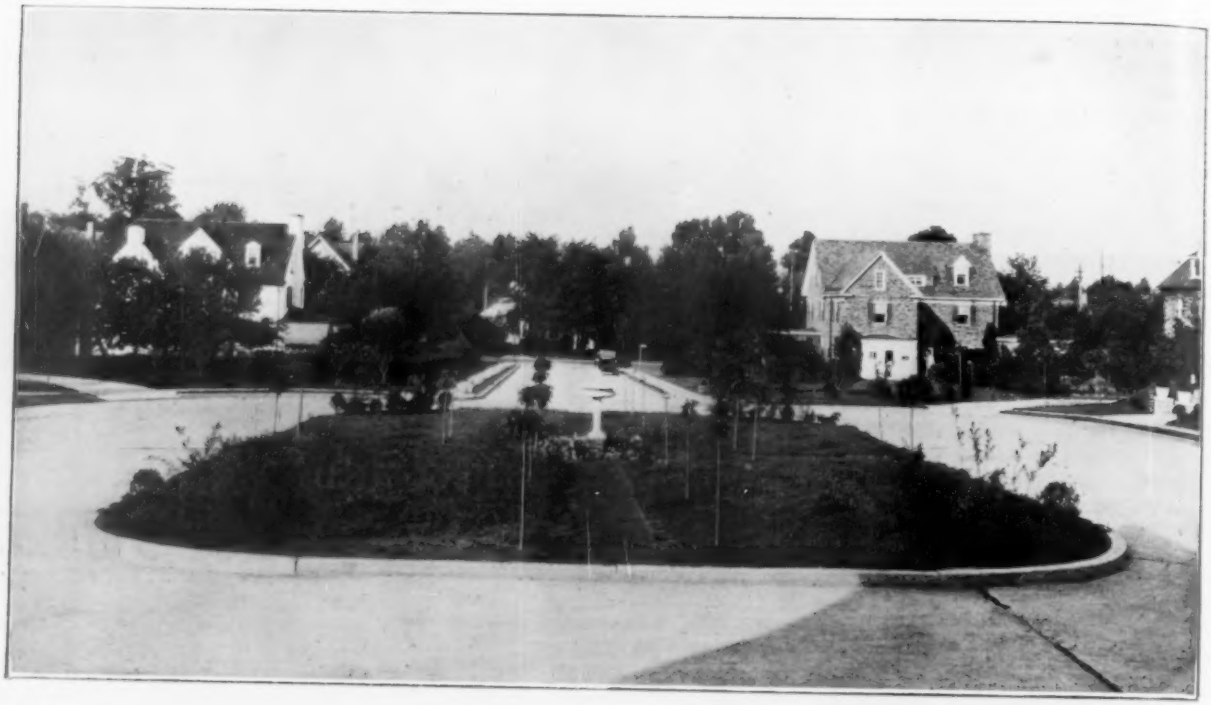
The examples of such officers, "about as popular as a scarlet fever sign," have a striking verisimilitude, and do not perhaps need to be quoted. The writer concludes:

"It goes without saying that in instances where the traffic officer showed courtesy to the visitor, it left a pleasant memory, but where his manner was harsh, ungentlemanly and boorish, recollections of passing through his city were far from pleasant. The sooner municipal authorities realize that their policemen may be living advertisements as well as guardians of law and order, the more successful will be their endeavors to attract visitors."

**HIS SMILE WON A PRIZE**

**Oscar Hettler, the policeman with the infectious smile, shown here at his post at Grand and Lafayette Streets, New York, has a fine home at Forest Hills, Long Island, awarded to him by the Happiness Candy Stores as winner of a popularity contest**

# A Suggestion to Realty Developers and City Planning Commissions



*Rexford Square, the beautiful example of an "interior park" of which two views are here shown, was placed upon the city plan of Philadelphia by special ordinance, conditioned upon both the open space itself and its circumferential streets being dedicated to the city. Including its driveways, this compact bit of landscaped beauty is but seven-eighths of an acre in extent; but the sum total of its value in terms of pleasure to the surrounding householders, in charm to the neighborhood as a whole, and—for that matter—its dollars and cents value to the owners of the remaining ground is very great indeed. Rexford Square is typical of the somewhat new sort of "breathing space" area that is beginning to be provided in the newer residence sections of cities.*

*Photographs by courtesy of Andrew Wright Crawford, City Parks Association, Philadelphia*

# The Cost of Water Analyses

By JACK J. HINMAN, JR.

Associate Professor of Sanitation, Water Laboratory Division, State Hygienic Laboratories, University of Iowa

THERE are many strange misconceptions of the present status of the examination of water for its bacteriological content, among most people whose knowledge of the subject is limited by what they read in the Sunday supplements and quasi-scientific magazines.

Those who are engaged in the study of water-supplies and in laboratory work connected with the water-supply industry have very peculiar demands made upon them from time to time. These demands are frequently based on the misconceptions referred to. Not only is there a very flattering misapprehension as to what the laboratory man is able to do with a given sample of water, but he is expected to be able to do these astonishing things while the person who brought the sample waits for his bottle. Presumably the visitor has some other use for the bottle. The fantastic nature of some of the demands made is amusing.

### $1,200 for an Analysis

There is a story that one of the earlier laboratory workers in this country one day received a strange-looking sample of water from a nearby populous city, accompanied by a letter on an official letterhead signed by one of the aldermen. The note demanded—and it is not an unusual demand today—that the sample be examined to find out just exactly what bacteria were in the water.

As the bacteriologist was already aware that the public thought only a slight amount of work was involved in such a matter, he wrote to the Mayor of the city. His letter explained that there would be a considerable amount of work involved and asked if the individual who ordered the analysis of the water was responsible and if the city would guarantee payment of the charges. A letter was duly received from the Mayor stating that the cost would be paid. Accordingly, a qualified assistant—probably a graduate student—was assigned to the job of isolating the various bacteria in the water and of identifying them as fully as was then possible. Time went on, and the assistant was able to identify an imposing number of organisms. After a while a bill for about $1,200 was sent in. I do not know whether the bill was ever paid or not, but there was a great rumpus over it and the city officials probably thought that they were very much overcharged. They were overcharged if one considers the value of the work done on the basis of the useful information furnished to the city. But on the basis of time and the materials used, the hours spent in the libraries studying descriptions of organisms, and the actual effort involved, the city was probably charged a very modest rate for competent work. It is a useful thing to know what you really need in an investigation and why you need it. To decide such matters intelligently and to use the information obtained is usually more difficult than to get the numerical data; at least it requires more judgment and experience.

### Requests in Great Variety

Almost every week there come to public water laboratories requests for the examination of water for typhoid organisms, and for the identification of all bacterial species present, and demands for the determination of everything organic and inorganic contained in the water samples sent. There also come demands for the effect of a particular water on paint, fabrics, metals, animals, bottled beverages of commercial or home production, and aluminum cooking utensils. There are demands for data on the effect of the constituents of the sample, on everything connected with the human body and its functions, beginning with Aaron's sign and going clear through the alphabet to zymurgy, which is the application of fermentation to the production of beverages.

**Ask for What You Need**

**This article exemplifies admirably the need for city officials to know what they want before ordering technical men "to find out just what is in the water," or to represent a report on "everything pertaining to street construction." Every official should carefully consider in consultation with an engineer just what information is needed. Then ask for it, thus saving thousands of dollars otherwise spent for interesting but unnecessary investigation.**

Some of these data can be given. Much of the desired information could be approximated if but one specimen of a given water-supply were received in a laboratory and the worker had unlimited time to devote to that special sample, but the state or the city or the corporation paying for the time used in the necessary investigation would in most cases find the work too expensive for the value. Besides this, too much routine work would be awaiting attention in the interval.

The water-works industry is understanding more and more what are and what are not useful and usable data. To be sure, new methods and new problems are continually coming up to receive study, investigation and adaptation to the needs of the various plants. Sometimes we get too interested in a single new phase or new process and claim more for it than is justified. But what line of human endeavor or interest is exempt from this charge?

### Occasional Analysis Valueless

The water-works industry is appreciating more and more the comparatively slight value of an occasional analysis and the much greater and more far-reaching significance of mass data when properly presented and marshaled. No longer do we demand the examination of a single specimen of water from a source which has not received an inspection on the ground by a qualified person and then, if by chance the results are satisfactory, rest content with the findings for periods of years.

We realize that a specimen of water collected at this moment may be essentially different from a specimen collected an hour hence, and that it in its turn may be entirely different from a specimen collected in the morning. This is why we want mass data. We want to have the opportunity to follow changes in the composition of the water and in the type and abundance of bacterial flora. Some of the changes may be highly significant, or they may be at least suggestive.

Slowly an idea of the need for close watchfulness over water-supplies is penetrating to the consciousness of the general public. An analysis dated 1884 and couched in archaic terminology as science considers it today, written out to be filed away among the records in the archives, no longer has the authority that it used to possess. Some towns used to follow the old practice of sending samples one after another to the laboratory for examination so long as the results were bad. Then, when by accident a good specimen was collected and the report received, immediately they would stop having their supply checked up. Today such self-deception is less common, but it is not extinct.

And so, when we realize how casings deteriorate, how the tops of wells, even the deep ones, are left in dangerous conditions by failure to close the openings

at the top, or by the displacement or damage of the protective devices; when we understand how filter plants cease to function properly at the most unexpected times, from causes which may or may not be obvious, we become more than ever appreciative of that providence which seems to look after children and those who will not look after themselves and so belong to the other well-known group.

**Trained Analysts Needed**

Let it be repeated that the need for constant watchfulness is slowly penetrating to the consciousness of the general public. Such an inclination to trust to ancient examinations as has been referred to, has long gone by the board in the better-conducted, more up-to-date water plants, where the persons in charge realize the difficulties and the variable nature of the water-supply. In the past, the plants where these things have been taken into account have been the larger ones which can afford the services of the most competent and best-informed men. It is in the small plants, especially those served by wells and supplied with water which ordinarily requires no treatment, that lack of knowledge of the local situation may be expected to persist for the longest time. In many such places the general idea seems to be that the man who knows how to throw a switch and how to tighten a packing knows enough to operate a water-works plant, but such men, with the best intentions in the world, are frequently making costly errors which entail not only money loss but perhaps sickness as well. Health and safety from fire, as well as satisfaction, are purchasable. Usually we get what we are willing to pay for, in water-supply as in other commodities of life.

# Demonstration of Fire-Fighting Facilities

INSURANCE underwriters, who regularly make a survey of American municipalities to look into their fire-fighting facilities, recently dropped in on Bloomington, Ill., a city of some 31,000 inhabitants. Their investigation was made on the usual basis of 100 points, 39 of them concerning the water-works, 23 the fire-fighting apparatus, and the other 38 based on condition of buildings, the personnel of the force, condition of the streets, traffic ordinances, and the like.

To say the least, their report was not a complimentary one. They decided that Bloomington was not adequately protected against fire. All of which caused something of a mild sensation among the citizens, who had always harbored the impression that the city had a well-nigh model department. There has not been anything approaching a serious fire for twenty years.

Immediately the townspeople were perturbed. Was the fire protection really insufficient, or was it merely a dire plot to increase insurance rates? Speculation ran riot for a time, and then the city determined to solve the question then and there and stage a demonstration.

A downtown block was cleared of all parked cars, and obstructed to traffic. Promptly at 3:05 in the afternoon, a general alarm was turned in, and every piece of apparatus in the city, except one, rushed to four downtown corners. Hose connections were quickly made, and a sham battle staged with an imaginary fire in a downtown office building. At one time nine streams of water were playing at one corner, with the water reaching the tops of seven-story buildings, the tallest in the downtown district.

As a finale to the demonstration, a turret nozzle was set up in a corner of the courthouse yard, and despite the fact that a stiff breeze was blowing, a stream of water was played over the courthouse dome, which is over a hundred feet high.

A close check was kept on the water pressure with gratifying results. The water-supply is deemed sufficient for the largest of conflagrations. The afternoon did demonstrate the need for a $13,500 pumper, the purchase of which has been recommended by the Association of Commerce, and is now under consideration by the city, and the need for more men to adequately man the department. A huge throng witnessed the affair.

JOHN N. LANGHAM.

FIRE DEPARTMENT DEMONSTRATION IN COURT HOUSE SQUARE, BLOOMINGTON, ILL.

# Study of American and European Thoroughfares—II

By W. H. TIEDEMAN
Assistant City Engineer, Seattle, Wash.

### Types of Pavements in Europe

The Forum district of ancient Rome is today excavated to its original level, which is some fifteen feet below the grades of the surrounding streets, and it is now an outdoor museum of what little remains of the glory that was Rome.

I had read of the marvelous system of Roman roads, and naturally experienced a distinct thrill to stand upon the pavement of the Via Sacra itself and to contemplate such scenes as the triumphal parades of soldiers and chariots which long ago touched the very pavement under my feet. The Romans employed countless slaves to accomplish these heavy constructions; but they must be given credit for conceiving such unusual works at that early date.

The angular flagging of the Via Sacra was laid directly upon the earth subgrade. Stories which we hear of the deep Roman roads must have had their origin from observation elsewhere. These blocks are of hard, dark stone, like basalt, and vary in surface area from several square feet to as much as ten. The surface was laid reasonably true, but must have been very severe indeed upon both vehicle and passengers. Elsewhere in Rome the old roads no longer show their original surfaces. The necessity for smoother riding qualities has caused them to be covered by macadam.

I saw a stone block pavement under repair in Rome where settlement had occurred. The blocks were cut truncated pyramid shape, about 4 inches square and 5 inches long. These were laid, point down, upon the plain earth foundation and rammed to an even surface by heavy wooden hand tampers. Rather crude, according to present-day standards.

Centuries after the Roman era, other cities of Europe felt the need for paving, and blocks cut from the abundant rock deposits near by, were the most available material to be employed. The crude methods of Claudius Appius were improved upon considerably, but still left plenty of room for further improvement.

In all the European cities one can still see in use today upon unimportant streets stone block pavements more than a century old. The immense plaza entrance of the Versailles palaces is paved with block about 8 inches square. The surface is extremely rough. Gradually, civilization improved its conveyances and this brought on the need for still better pavement surfaces. In most cities the desired result was obtained by placing an asphaltic dressing directly upon these old stone blocks. In Germany, however, the large blocks were broken into smaller units about 2½ inches square, which could be laid to truer surface than the larger sizes. Such pavements were called "Kleinpflaster," literally, "small flagging."

The pavements visible on most prominent streets in Europe are some of the asphaltic type. In London, however, creosoted Norway pine blocks still hold favor in the downtown section. I saw a new pavement under construction which was of 8-inch reinforced concrete base with wood block surface. The need for such heavy design was soon apparent when I saw a steam-driven lorry on solid steel wheels drive by. I was told that the total weight of vehicle and load was 22 tons; and to think that such noisy, coal-smoke belching conveyances are permitted on the streets of Europe's largest city!

Portland cement concrete is just beginning to receive attention as a paving surface over there. In Hamburg some of the residential streets had been paved with this material before the war. The results were a disappointment indeed; and the Germans, with all their reputed technical skill, built these, which have

EASTLAKE AVENUE, SEATTLE, WITH ORNAMENTAL LIGHT POLES OBSCURED BY UGLY WOOD POLES SUPPORTING OVERHEAD WIRES

ANOTHER VIEW OF EASTLAKE AVENUE, THE PACIFIC HIGHWAY THROUGH SEATTLE, AN EXTREME, BUT COMMON, CONDITION OF CIVIC DISFIGUREMENT DUE TO POLES AND OVERHEAD WIRING

VENICE IS A CITY OF ABOUT 80,000 POPULATION. THE CITY COMPRISES SOME 600 BLOCKS, EACH AN ISLAND. THERE IS NOT A STREET CAR, AUTOMOBILE OR WAGON THERE. TAXICABS ARE GONDOLAS

cracked badly in every direction. They can now learn from America how concrete can be used successfully. We surely lead the world, or at least what I have seen of it, in this particular. In Paris, I was astonished to see women carrying stone blocks in their aprons to workmen who were repairing a roadway.

Seven-sack concrete mixers are the common equipment used by paving contractors in the northwest part of the United States. Outside of London, towards Wimbledon, I saw a county gang laying a concrete pavement. The little mixer was a one-half-sack capacity, and all the materials were measured in boxes having two handles on each end. The workmen carried the materials to the skip in this manner. After mixing, the concrete was dumped upon a little flat car which was pushed along an industrial track about fifty feet to where the pavement was being laid, and there the concrete was shoveled off. It will be evident that with this modest type of equipment the finishers had time to do, and were doing, a very creditable job. When I told the foreman our large contractors dumped fourteen times as much concrete as he did, and that every two minutes, he was ready to admit that we were terrific pace-makers.

Returning to America, with its unprecedented traffic problems, one will see new construction employing a wide range of materials. Circumstances and politics decide differently in various cities. Chicago and Detroit, which are the world's leaders in rebuilding streets to accommodate the ever increasing traffic, have also very equitable policies for distributing the cost. In my opinion, the abutting owners alone should not shoulder the whole burden, when the general public very obviously shares in the benefits. In Chicago, the general funds contribute about 25 per cent of the cost of street widening, while in Detroit the general public contributes between 25 and 35 per cent. The taxpayers of Detroit voted to tax themselves a one mill levy annually for this purpose alone. In fifteen years this one mill will produce nearly $45,000,000 to pay the public's one-third. Certainly a stupendous street-widening program!

### Provision for Street Trees

The very general plan of providing plenty of area for tree planting on boulevards in Europe will prove to be a decided advantage to them in the future. Such lanes are reserves of space which can be encroached upon and even absorbed entirely when the need for wider roadways is forced by the more general ownership of automobiles. Autos are by no means used by the public there in such numbers as in America. This relatively smaller number, however, is already causing congestion on the narrow streets, and European cities will some day have traffic jams the like of which we have not seen, because of our wider prevailing street widths. The widest street which came under my observation was the Champs Elysées in Paris. This I paced off to be 318 feet between margins. Yet of all this extraordinary width, the single central roadway occupies but 88 feet, or only 28 per cent. Unter den Linden in Berlin is 204 feet over-all. This has two marginal roadways which represent 37 per cent of the available space.

The Mall in London is 160 feet wide; the single central roadway takes up but 37.5 per cent of the entire space. Each of the above are liberally planted to trees. In America, few business streets except in small towns are decorated in this way. The average American in consequence looks upon such trees as small-town stuff. I believe Washington, D. C., is the only large city in the United States where this European custom was adopted. When one trees dies, it is always replaced by another, thus keeping the appearance the same.

One must remember that our capitol city was laid out by a French engineer and, thanks to his knowledge of Paris, he planned the town-site using standards of widths and a system of diagonals which Paris only could boast. When one considers the fact that our first settlers had all the latitude in the world to do as they pleased, it is a great misfortune that only one city, out of our great number, should have begun with a definite plan of extraordinary form and street dimensions. L'Enfant of course could not foresee the traffic nuisance which his Capitol, White House and other squares would cause, otherwise he no doubt would have shaped these areas in circular or elliptical form. But my deep respect and admiration will always endure for our farsighted first president, who chose the man, and for M. L'Enfant, the engineer who executed the plan. He was certainly a pioneer in city planning work, and accomplished a fine job with little precedent and with an unsympathetic people to work with.

It was a misfortune that the tree-planted-boulevard idea wasn't imported, too, when our first settlers came over. It would be a blessing if each large American city could boast a Champs Elysées where the removal of struggling trees would provide additional roadway space. I had heard a great deal about the wonderful trees along such boulevards. I have spent almost my whole life in the Puget Sound country where trees are trees—imagine my disappointment when these highly touted parasols of boulevardiers proved to be modest little growths rarely more than 18 inches in diameter and in most cases decidedly less. The fine elms along Summit Avenue in St. Paul surpass in size and beauty anything which I saw in all my European travels.

### Traffic Problems in Proportion to Population

The modern municipal engineer must turn to America for traffic problems and their solution. We have these problems in genuine form and, fortunately in many cases, the courage and money to solve them. Magnitudes are of course relative. The visitor from a village is surprised at the expenditure in towns. Town people in turn are astonished at the accomplishment of a large city. Then, finally, a metropolis like New York makes all the world gasp, while New Yorkers themselves do not feel that their undertakings and their costs are so extraordinary. An observer soon discovers that where cities exceed several million population, their thoughts generally turn to rapid transit, rather than to providing additional roadway space for autos.

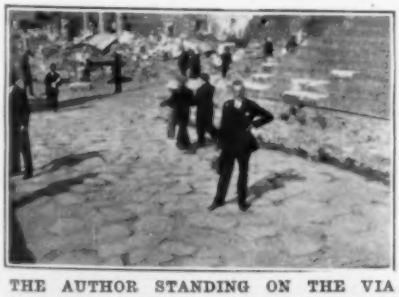
This brings up another fact which surprised me and that is, that the ownership of automobiles in different cities is by no means proportional to their populations. I am speaking of American cities as a group. It would be financially impossible to widen the main streets of New York City, so such thoughts may as well be dismissed. If automobiles cannot stand the congestion, let them stay away. As a result, there are more people of means in New York City who do not own cars than the entire population of Seattle. They couldn't find garages at reasonable cost to house the cars, or derive either bene-

fit or pleasure from their ownership. The main streets of Seattle are just as wide as Broadway. You can accommodate just so many cars in a given space and no more. Hence I met with another surprise when I found that the traffic jam in New York at peak hours was numerically no greater than in Seattle.

### Underground Wiring

One is impressed with the fine appearance of European cities, due to the total absence of overhead wiring. In America such requirement has not been so general or so complete. In our eastern cities the downtown areas are usually free from visible wire, but as one proceeds westward the unsightliness increases. The cities of the great Pacific Northwest are especially disfigured in this respect. Close proximity to forests of fine pole material leads us into this natural error, until today we find ourselves confronted with the formidable problem of getting this maze of wires underground. Washington, D. C., is an outstanding example of a city with all wires, including trolley wires, out of sight. It may make public utility services cost more, but surely is worth it.

Small cities are usually very glad to get public utilities and therefore fear to impose any requirements which might discourage their entry. However, if overhead wiring is at first permitted, the problem increases in complexity and expense until it becomes difficult indeed to propose a removal of these offenders of civic beauty. This is exactly the condition which confronts us in Seattle and I know is equally true elsewhere. We are paving about 60 miles of streets a year. Alleys are not general here, into which poles and wires could be removed. To cut up the pavements to build conduit systems will be the most expensive alternative and I have recommended that our standard location for undergrounds be modified from the location under roadways to a place between the curbs and property lines. This is the general practice in Europe and I can see many advantages in it. Sidewalks can be restored at less cost than pavements, and it is not so serious to interfere with pedestrian areas as it is to block vehicular traffic.



THE AUTHOR STANDING ON THE VIA SACRA, AN ANCIENT ROAD IN ROME. SUCH PAVEMENTS WOULD NOT MEET WITH MUCH FAVOR TODAY

FOURTH AVENUE IN SEATTLE WAS WIDENED FROM 66 FEET TO 84 FEET IN 1907
Permanent buildings were permitted to arcade for a period of 15 years as shown. This reduced the cost of condemnation very materially

### In Summary

To summarize, I believe that many of our present small cities will ultimately become great ones. For this reason, city planners should apply to small cities the lessons which the auto has forced upon our present great communities, in order that their faults may not be duplicated when the need for more space becomes apparent in the most unexpected places. Where formerly 75 or 80 feet was considered a very ample width, this is no longer sufficient.

Business will require permission to stand autos at curbs, at least for limited periods during the greater portion of the business day. I do not consider it a hardship on business to prohibit the standing of cars for the short morning and evening peak traffic hours. Such local legislation will always arouse opposition, but this is because the actual influence and effect on sales has not been analyzed accurately.

A well-designed thoroughfare will have at least eight traffic lanes. The central two may be occupied by surface street-car lines. With autos standing at curbs, this will leave two lanes open at all times in both directions. In places where a relieving thoroughfare cannot be provided, the roadway space should be further expanded to show three open vehicular lanes in both directions. The width of such lane units increases as the speed increases. To allow for safe passing and a small amount of maneuvering, 10 feet is desirable. Considering then the pedestrian needs will determine the sidewalk widths, which will enable one to fix a total over-all dimension not less than 108 feet—for a street within a city. For suburban thoroughfares, the superhighways of Detroit and its surrounding Wayne County afford a splendid example. To permit of greater and safer speed these wonderful 204-foot streets are divided into two roadways, each for one-way traffic. The unit width for the lanes is 11 feet. This has resulted in the present pavement strips, 44 feet wide, separated by the central street-car area, which is 40 feet wide. This plan of keeping speedways well apart has been adopted in our state and elsewhere to good advantage for safety.

Finally, let us provide space for trees, even if this must some day be absorbed by the ever increasing automobile needs. The bare aspect of our highways is nothing to be especially proud of, and this reservoir of area may be a very decided boon for future generations.

## Some Advantages to Be Weighed Against the Disadvantages of City Life

CIVIL and religious liberty, freedom of thought, of speech, and of the press, and personal freedom, as well as economic freedom and the development of political liberty, all appear still to be favorably affected, as they have been in the past, by the growth of city life. The urban environment also appears to afford an appreciable advantage over the rural environment in respect to the development of political capacity and political aptitude, in respect to the promotion of poltical initiative and political creativeness, in respect to political activity, and especially with reference to political leadership. Public spirit, in both its positive and negative aspects also appears to be affected favorably by the urbanizing movement; and there is abundant evidence of a rise to higher standards of political purity as urbanization progresses—convincing proof of the inaccuracy of the charge that political corruption is inherently associated with city life.

—From "Urbanization," by John Giffen Thompson.

# The Relation of Turbidity to Coagulant Dosage

*By* KENNETH C. ARMSTRONG
CHEMIST, FLORENCE FILTER PLANT, OMAHA, NEBR.

SOME difficulty has been experienced at the Omaha plant in determining the correct dosage of coagulants. There had been considerable fluctuation in the quality of the water being treated, and to insure a properly settled water reaching the filter plant an excess of alum was often used. Factors which influence the coagulant dosage, such as variable rates of pumpage and fluctuation in the turbidity of the settled water before treatment, were not responsible for many changes which were noticed in the quality of the treated water. At various times dosages of alum were added which were in excess of the actual requirements because the chemist did not know whether a rise in turbidity of treated water was only a temporary condition due to known causes or to some change in the quality of the water entering the plant.

### Investigation Started

In starting the investigation the problem was attacked from both the chemical and the physical side. It was considered likely that the sulfate content might be an influencing factor. Numerour quantitative analyses were made for sulfates. It was found that the sediment settled very readily whether the sulfate content was high or low. Oxygen consumed determinations were made in an effort to disclose the presence of organic colloidal materials which might be causing the undesirable conditions at times. After a number of determinations were made, it was apparent that no information could be obtained from this source. The hydrogen ion concentration was found to be very near the optimum value for this water.

River turbidity did not have any influence upon coagulant requirements. At times when it was as high as 12,000 p.p.m. (parts per million) the water was often more easily settled than when the turbidity was a fraction of this amount.

After the water left the grit chambers and was ready for chemical treatment, it showed considerable fluctuation in turbidity from day to day and even from hour to hour. The turbidity of the settled water did have some effect upon coagulant requirements; that is, a water having a turbidity of 400 p.p.m. could be treated with ¼-grain per gallon less of alum than water with a turbidity of 600 p.p.m. But it was also found that water having 400 p.p.m. turbidity did not require the same dosage of coagulants at all times even though the rate of pumpage was the same. Settled water turbidity influenced somewhat the amount of coagulants required, but it did not indicate the quality of the water. Settled water turbidity is determined every two hours when muddy water is entering the plant.

### Settling Tests

Settling tests were made on river water to find if some method of measuring the finely divided material which tended to remain in suspension could be worked out. At first a liter graduate was used. River water was permitted to stand in the graduate for various lengths of time, after which samples were siphoned off at the top for turbidity tests. It was apparent that the heavier mud which was slow in settling was having an influence by causing them to show a higher value at times by inhibiting the settling of the fine material. A 5½-foot glass cylinder was tried and this gave much more satisfactory results. Samples were allowed to stand for one, two, three, six, and twenty-four hours. The turbidity in one hour showed a fairly constant value; that is, there usually was no change, whether the chemicals required were high or low. It was apparent that this determination was not of any value. The two-hour turbidity tests were more successful. Greater fluctuations were noticed from day to day, but it had a tendency to show a high value when the original river turbidity was high due to the effect of heavier sediment inhibiting the settling of the finely divided material which was to be measured by the test. The three-hour turbidity test showed a range of values varying from 40 to 600 p.p.m. It was found that the coagulants required could be governed largely by the results obtained from this determination. The six-hour turbidity test showed more constant values and did not change with every change in coagulant requirements. Turbidity tests made after 24 hours did not show much change except when the water contained very finely divided material almost colloidal in nature. At such times this value has been as high as 140 p.p.m.

### Coagulation Improved as Result of Tests

Three-hour turbidity tests are made daily at the laboratory. They usually show a fairly constant value for several days. When an increase is noticed in their value, a gradual rather than a quick change in the water being treated is noticed. This is due to the detention period between the river and the point where the chemicals are applied. At such times the alum is raised to meet the new conditions. When the value shows a decrease, a gradual improvement in the water takes place, and the alum dosage is decreased accordingly. This is illustrated by the curve showing the settled water, turbidity, three-hour turbidity, and the alum dosage for the month

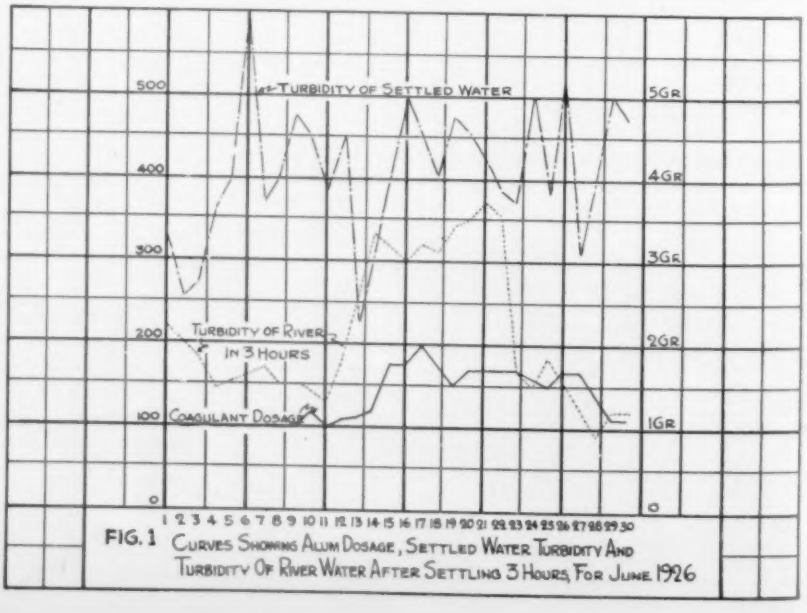



FIG. 1 CURVES SHOWING ALUM DOSAGE, SETTLED WATER TURBIDITY AND TURBIDITY OF RIVER WATER AFTER SETTLING 3 HOURS, FOR JUNE 1926

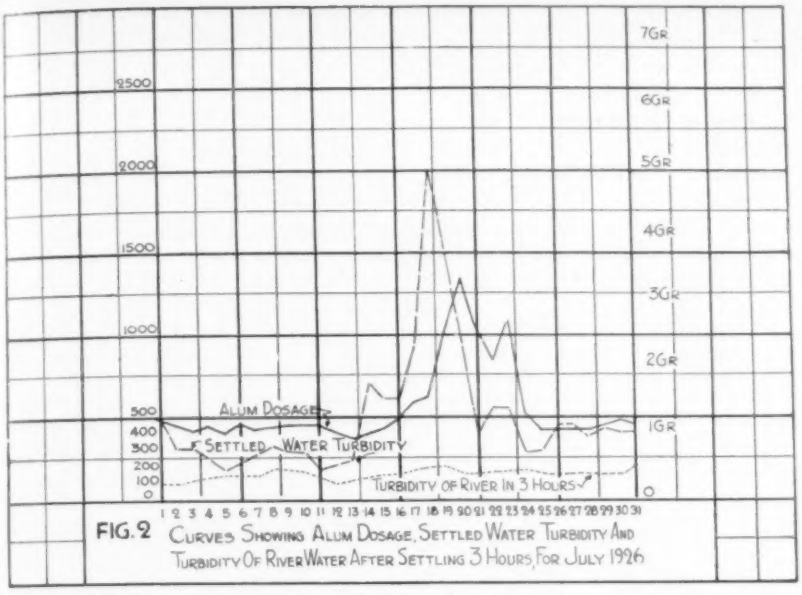



FIG. 2 CURVES SHOWING ALUM DOSAGE, SETTLED WATER TURBIDITY AND TURBIDITY OF RIVER WATER AFTER SETTLING 3 HOURS, FOR JULY 1926

of June, 1926, as in Figure 1. For the first eleven days of that month the water was in a condition which required only a moderate dosage of alum. The settled water turbidity fluctuated from day to day, but not enough to have much influence upon coagulant requirements. The three-hour turbidity, however, showed a decided increase at the middle of the month, and this brought a corresponding increase in coagulant dosage. Such a change is typical of this supply, although most of them do not last for so long a time and do not result in such an increase in alum dosage. In this case there is more time between the drop in the three-hour turbidity and the cut in alum dosage due to the high pumpage at that time. For most months of the year there is not so much fluctuation in chemical dosage. Often it is possible to run for a month without a change.

### Type of Turbidity Affects Dosage

Since these tests have been made in the laboratory, several unusual conditions have been found in the quality of the water being treated. After the flood in Sioux City in September, 1926, a very dark colored mud came into the plant. The settling experiments proved it to contain the largest amount of finely divided material that has been found in the past two years. The curves showing the settled water turbidity, three-hour turbidity, and alum dosage for the month of September give an idea of the influence of slow-settling material on chemical dosage. During this month we did not have any highly turbid settled water, and no extra dosage of chemicals was required because of this type of turbidity. The turbidity in three hours, however, was as high as 600 p.p.m. and required a decided increase in chemicals. A much larger dosage would have been used if the settled water had shown a corresponding increase in turbidity.

### High Pumpage Shortens Settling Period

In July, 1926, the pumpage was extremely high. The result was that the turbidity of the settled water before it received the chemicals gradually increased until it reached 2,000 p.p.m., as shown in Figure 2. The three-hour turbidity tests did not show a corresponding increase, however. This water was treated by applying the alum at two points. A dosage sufficient to get the water down to a few hundred parts per million was applied, and then a second dosage was applied to the effluent of the next basin in the series. The second dosage was very effective and produced a clear treated water with a small amount of coagulants due to the small quantity of slow-settling material in suspension. In this case more alum was used than was necessary because it was the first time that we had encountered a condition of this kind and we did not know what results to expect from the chemicals.

In May, 1927 (see Figure 3), the river was higher than it had been for many years. The turbidity of the river was around 10,000 p.p.m. The heavier material was slow in settling, however, and the result was that the first three basins were filled with suspended material and the water as it received the alum had a turbidity of 7,500 p.p.m. The three-hour turbidity at that time was 300 p.p.m., which indicated that after the heavy mud was settled a second rather heavy dosage of alum was required. The first addition of alum was sufficient to reduce the turbidity to 600 p.p.m. after passing through the first basin. A second dosage was then added which was sufficient to bring it to the filter plant in proper condition. That type of suspended material was the worst that has been encountered thus far. If it had lasted for a longer period, the basin receiving the water after the addition of chemicals would have been filled with mud and the secondary dosage of alum would not have been effective, because of the high turbidity of the water at the second point of application. The situation could have been improved in such a case by applying the alum at three points instead of two.

### Twenty-Four-Hour Settling Tests Are Secondary Indicators

It has been found that the three-hour turbidity tests did not indicate the same dosage at all times, even though its value, the turbidity of the settled water, and the pumpage were constant. More alum is required when the results obtained from settling the river water for 24 hours are high. This is especially

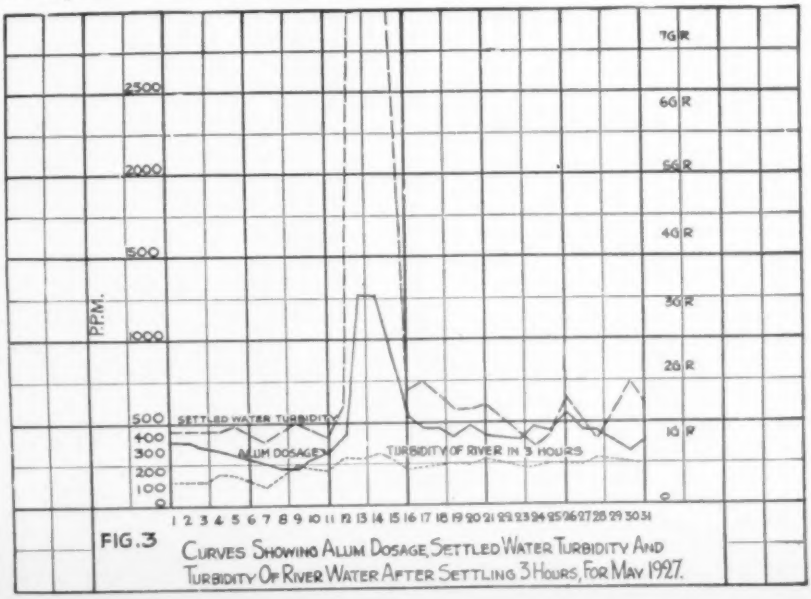



FIG. 3 CURVES SHOWING ALUM DOSAGE, SETTLED WATER TURBIDITY AND TURBIDITY OF RIVER WATER AFTER SETTLING 3 HOURS, FOR MAY 1927.

noticeable in February when the river breaks up. At that time the turbidity is reduced to 300 p.p.m. in 3 hours and as high as 140 p.p.m. in 24 hours. Such water is very difficult to treat to prevent suspended material from passing the filters. During the greater part of the year, however, not much fluctuation is noticeable in the 24-hour turbidity. Most change takes place in three hours, and from that test the coagulant dosage is largely governed.

**Conclusion**

1. The material in suspension is chiefly responsible for fluctuation in coagulant dosage.

2. Coagulant dosage can be governed largely by the turbidity obtained after river water has settled three hours.

3. Very turbid water is not difficult to treat by applying the chemicals at two places, unless the three-hour turbidity is high.

4. Turbidity of river water taken after it has settled for twenty-four hours gives a good indication of the concentration of very finely divided material some of which is of a colloidal nature.

ACKNOWLEDGMENT.—From a paper presented before the Iowa Section of the American Water Works Association.

# Repaving a Busy Street

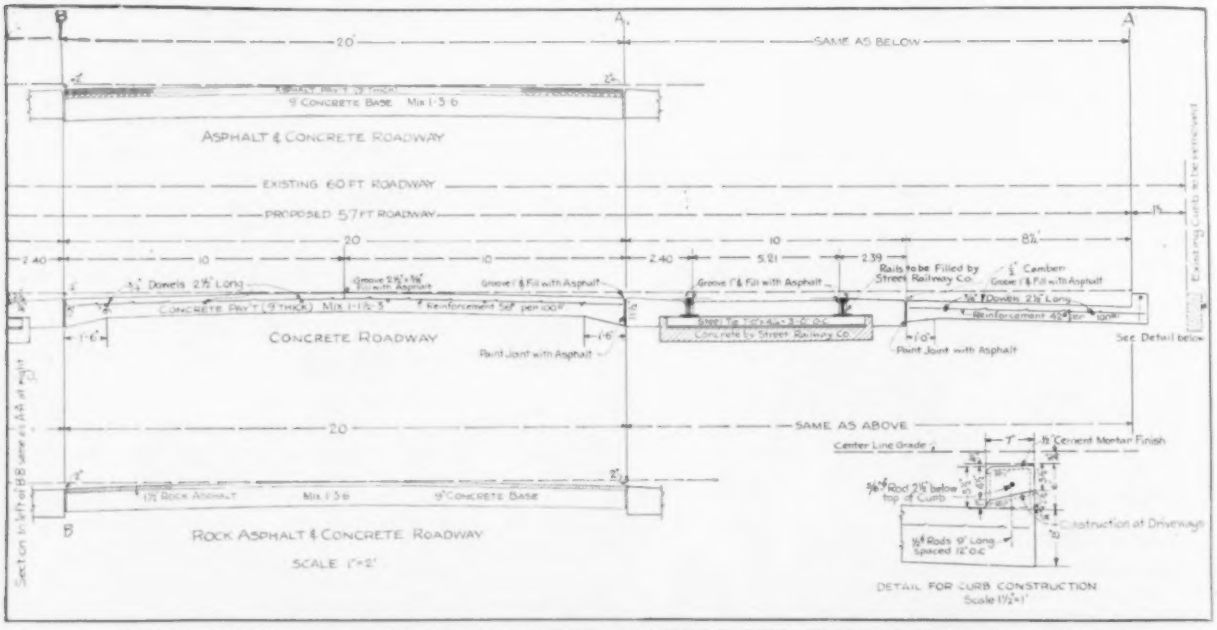
*By* H. F. SHIPLEY
ENGINEER OF HIGHWAYS, CINCINNATI, OHIO

ERIE AVENUE, Cincinnati, Ohio, from Madison Road to Delta Avenue, was repaved last fall, continuing the arrangement of street-car tracks at the sides of the street. This part of Erie Avenue is in the Hyde Park residential district and is about 1½ miles long. The width between the curb lines is 60 feet, with the car tracks on the sides, the center of each track being about 14 feet from the curb line. On a portion of the existing street, no curbs have been set, the part of the street outside the tracks being merely earth. The roadway between the tracks was of tar-bound macadam and the remainder water-bound macadam in very poor condition. The accompanying cross-section shows the new improvement.

No extraordinary methods were adopted to get the work done in record time. However, as it was known that it would not be possible to let the contract for the pavement before the first of September, it was decided to let the Cincinnati Street Railway Co. lay its rails in advance of the commencement of work by the city contractor, a practice not heretofore used in Cincinnati. The new tracks were laid in very quick time, the work having been commenced July 5 and completed August 26. In carrying out the track work, a temporary track was laid the entire length of the street and one of the permanent tracks was laid while the other track and the temporary one were being operated. Operations were then reversed and the other permanent track was laid.

Bids for the street improvement were taken August 23, but on account of delay in awarding the contract, work was not started until September 7. The contractor made good progress on the job within the first month and placed the concrete surface in both tracks and made fair progress toward placing the strip outside the rail. The actual paving did not at first progress as rapidly as was hoped, but increased in rapidity as the job progressed. At present writing (December 8, 1927) improvement is about 75 per cent finished, but owing to the lateness of the season it will not be possible to complete this job this season.

The accompanying illustration shows the alternate methods for repaving on which bids were received. The method adopted is indicated at the top.


SAME AS BELOW
9" CONCRETE BASE Mix 1:3:6
ASPHALT & CONCRETE ROADWAY
EXISTING 60 FT ROADWAY
PROPOSED 57 FT ROADWAY
Rails to be Filled by Street Railway Co.
CONCRETE ROADWAY
Paint Joint with Asphalt
SAME AS ABOVE
Center Line Grade
½" Cement Mortar Finish
Construction at Driveway
1½ Rods 9' Long Spaced 12' O.C.
ROCK ASPHALT & CONCRETE ROADWAY
SCALE 1"=2'
DETAIL FOR CURB CONSTRUCTION

**ALTERNATE METHODS OF REPAVING ERIE AVENUE, CINCINNATI, OHIO, ON WHICH BIDS WERE RECEIVED**

# And What Is the Condition of Your Streets?

THE article, "A City is Judged by the Condition of Its Streets," which appears on the following page is one of the best editorial contributions to the cause of better city streets it has been our privilege to read for many years. We constantly find articles on "good roads," but seldom on better city streets. A careful reading of the article will prove invaluable to all city officials, executive, legislative and judicial.

We are indebted to William McK. White, President of the Chausse Oil Burner Company, Elkhart, Ind., for permission to publish in THE AMERICAN CITY this material from a piece of advertising literature that has been distributed by that company.

# A CITY IS JUDGED BY THE CONDITION OF ITS STREETS

## Well Maintained Pavements Are an Index of a Community and the Best Barometer of Wise Activity of Municipal Officials

## POORLY PAVED TOWNS ARE AVOIDED

### City Fathers May Establish Creditable Records by Providing Modern Equipment for Economical Street Repairs, Well Within Means of Every Progressive Community

*"I'm now arrived, thanks to the gods,*
*O'er pathways rough and muddy,*
*Which surely shows that making roads*
*Is not this people's study.*

*"And tho I'm not wi' Scripture versed,*
*I'm sure the Bible says*
*That wicked sinners shall be damned*
*Who do not mend their ways."*

WHEN Robert Burns wrote these verses there were no asphalt streets and concrete highways, motor cars or trucks, but they appropriately refer to many cities which are exercising mistaken economy by deferring street-paving maintenance. At no time has there been greater need for properly repairing municipal streets than at present.

Capital investment in pavement is usually a large item of a city's assets, one which is constantly in sight, more evident than much other municipal property. It should be cared for, but observations on a recent tour of over 2,000 miles indicate that paving-repair programs in many cities have been considerably curtailed. Under present conditions this is surely a short-sighted policy of some city officials.

When a street needs repairing it cannot get better by being left alone. It only gets worse, and disintegration through neglect soon necessitates complete resurfacing, whereas proper maintenance is much less expensive. Local reputation of municipal authorities bears a direct ratio to pavement conditions. When streets are full of holes, cracks and bumps, which are visible sources of annoyance, complaints which arise are numerous and within reason.

#### Who Is Responsible?

Who is to blame for street conditions such as can be found with little difficulty in nearly every town and city? Who can really improve this situation?

Inquiries of local street department heads in charge of paving construction and maintenance, told of operations under restricted budgets, often with inadequate, insufficient or obsolete equipment. They seemed anxious to do their work effectively and promptly and quite willing to keep pavements in first-class order, but their troubles were manifold.

Many cited appropriation cuts by boards of works or city councils, not because street departments squander city money, but because city fathers do not always realize that street preservation requires priority. True, every city has heavy annual expense for a multitude of essential items. Nevertheless, street surfaces are subjected to hard usage, steadily becoming more severe, and maintenance of these valuable pavements should be like a good clock—it must not stop.

Other superintendents were so busy with new construction during summer months that repair work was being deferred. It was being left until cold weather, like the case of the man who did not fix his leaky roof in dry weather because he didn't have time, and in wet weather he couldn't.

There was another grievance—that the repair gang is often treated like a necessary but undesirable evil, a source of constant expense, a poor relation who is always present. Actually, a street repair squad can do more good for a city than many other employees, work which is evident to local residents and to touring visitors, work having direct bearing on a city reputation.

#### Tourists Report Conditions

At city halls, mayors, city managers and engineers and board of works members were very courteous. They appreciate the tremendous amount of traffic passing over highways and streets. The number of people traveling between cities has become uncountable. Vacation tourists, those on business, bus passengers and even truck drivers, constitute a vast moving body who quickly spread opinions of municipalities on their routes. Such comments affect a city's progress.

One official mentioned a recent example. A party of business men from a large city passed through a town of about 20,000 and were impressed by its substantial and pleasant appearance. Soon their discussion led them to turn back, and within four months they moved into that town a new and valued industry. If those men had bumped from hole to hole in pavements in that town, they certainly would not have been led to return.

Further inquiries led to councilmen and commissioners, direct representatives of the people, men who can vitally affect the conduct of municipal departments. Information indicated that council usually reduces all budgets, often curtailing improvements recommended by active and competent department heads. Seldom do councils increase a budget. Consequently, department managers present budgets which they expect to have sliced. Of course, there is reason in all things, and unrestricted expenditures would be extravagant.

As far as street repair work is concerned, the subject of these comments, it seems that more initiative is needed among councilmen. They should not arbitrarily and without full knowledge decline requests for equipment and material of great value to the city in such work. One street superintendent had just come from the Mayor's office, where he was told that "the Mayor was going to cut all budgets," although the department budgets had not even been turned in.

#### Intelligent Public-Spirited Councilmen Needed

Why, for example, do not council members study street-maintenance requirements and equipment so they could sit with department heads and advise with them on mechanical devices to speed up operations, increase efficiency and decrease labor cost? That would benefit the city and certainly be a credit to those members who seek improvements that redound to the fine repute which every citizen desires for his own home town.

This answers many questions raised by these inquiries. Councilmen who support such an important local improvement as street paving are recognized as public-spirited officials and as actually preserving one of the city's finest and most necessary institutions.

Increase in new paving is commendable, but pavements must be maintained. The finest pavement is not eternally permanent under existing traffic loads. Highways of hardened steel would deteriorate and be unsatisfactory in many ways. Asphalt, concrete, wood or granite blocks, all involve repair expense, an unavoidable tribute to millions of people who would not under any circumstance return to dirt roads.

This is a machinery age. Industry proves that machine operation is an economy, increasing output with decrease in unit costs and in human or animal fatigue. Who would revert to horse-drawn fire-engines, picturesque though they were? Who employs manual labor for mixing concrete, sweeping streets or loading trucks, when such modern machines are available as engine-driven concrete mixers, street sweepers, portable asphalt plants, loaders, etc.?

A well-equipped street department should possess such things—new, modern, efficient ones—not antiquated home-made apparatus frequently seen, bearing ownership signs of the city which it represents. The best is still cheapest in the long run.

Every good citizen is proud of his city, its industries, its homes and buildings, its public utilities and, by no means least, its streets. Nearly every one is now a motor-car owner or user, and always will be, for business or pleasure, and pavement conditions are as important as the price of gasoline.

It is up to the councilmen, evidently. What councilman is going to foster the modernization and efficiency of his street-repair gang?

# Plans for International Housing and Town Planning Congress

## *To Be Held in Paris, July 2 to 8, 1928, in Connection with an International Social Welfare Fortnight*

UNDER the auspices of the President of the Municipal Council of Paris and the President of the General Council of the Department of the Seine, arrangements have been made by the International Federation for Housing and Town Planning for a very important International Housing and Town Planning Congress, to be held in Paris July 2 to 8, 1928. During that week and the week following there will also be held in Paris, as part of the "International Social Welfare Fortnight," an International Congress of Public and Private Welfare, July 2 to 8; an International Child Welfare Congress, July 8 to 12; and an International Conference of Social Work, July 8 to 13.

During the period of these conferences there will be an exhibition dealing with housing, town planning and social welfare, and arrangements will be made so that all Congress delegates will be enabled to visit the exhibits.

It is hoped that a large delegation from the United States will attend the International Housing and Town Planning Congress. To this end a special committee of American members of the Federation is being organized, of which Harold S. Buttenheim, Editor of THE AMERICAN CITY, has been asked to serve as chairman.

An outline of important features of the Paris program, as arranged by the International Federation for Housing and Town Planning, follows:

### HOUSING

*Building Costs.*—The objects of the papers and discussion will be to ascertain (a) the present tendencies of costs, whether to rise or fall, or become stabilized, and the various factors in this question; (b) the effect of subsidies upon building costs; and (c) the methods of insuring efficiency and economy in the production of houses. Under (c) will be included organization of labor, standardization of fittings, other forms of standardization not necessitating a monotonously uniform external appearance, labor-saving methods and appliances, and an inquiry into the best number of houses to build under one contract or one municipal operation to insure economy and efficiency in production.

*Rural Housing.*—The object is to ascertain what are the needs of land-workers and those engaged in work associated with agriculture, how these needs are being met and what further steps are necessary. It will involve a study of the grouping of houses in rural communities, the most suitable types of houses and the difficulty of building them at economic rents, what forms of assistance, if any, are necessary, and whether permanently or not, insuring that houses are kept in good repair, the problem of the "tied-cottage" (a cottage belonging to a farmer that a laborer may be obliged to vacate when leaving his service), and the housing of unmarried and seasonal laborers. As agricultural systems differ in the various countries, it will be necessary to differentiate between measures necessary for hired laborers and for independent peasants. This subject will not include housing in semi-rural mining or industrial districts.

*Housing of the Very Poor.*—Much of the financial assistance given by governments or local authorities during the last few years has benefited those unable to afford the increase in economic rents resulting from the war. Below this stratum of society is a class too poor even to take advantage of such assistance and for which special measures may be necessary in the interest of society as a whole. The object of the papers and discussion will be to ascertain what has been done to improve the housing of this class, what still remains to be done, and how far such assistance may be regarded as permanently necessary.

### TOWN PLANNING

*Mass and Density of Buildings in Relation to Open Spaces and Traffic Facilities.*—The object is to discuss the relations between (a) the height, depth, width, and total cubic contents of buildings and proportion of plot built upon; (b) open spaces necessary for healthy and efficient communities; and (c) traffic facilities, also, on the basis of the above relations, to discuss the obstacles preventing the realization of desirable standards of requirements and practical methods of overcoming such obstacles.

*Legal and Practical Difficulties in Carrying Out Town and Regional Plans.*—The object is to ascertain what are the legal and practical difficulties, how far they are being overcome and by what methods, and to obtain suggestions as to further powers required or other means that may be employed to overcome obstacles to comprehensive planning.

# Woman's Club Program for Better Housing

THE poorer and more congested sections of most cities have housing conditions which fall below the minimum standards dictated by health and decency. This is a matter which has long weighed upon the conscience of women's clubs, and at length, in the case of one of them at least, has led to investigations which give promise of bringing about ultimate reform.

Two years ago, the Woman's Club of Albany, N. Y., through its Social and Industrial Conditions Section, with its Housing Committee, and with the cooperation of the Housing Committees of the City Club, the Council of Jewish Women, and welfare agencies in the city, started its investigation of old houses in the city. Studies were also made of existing health laws and ordinances, and of building codes of the city as compared with legislation in other cities. The results, which show conditions to be critical, have led to the following recommendations, made by the Social and Industrial Conditions Section, and approved by the Board of Directors of the Woman's Club:

I STRICTER ENFORCEMENT OF EXISTING LAWS AND ORDINANCES

1. Through wider publicity and information concerning the laws.
2. Through cooperaton with social welfare agencies.
3. By appointment of a full-time health officer. (The Woman's Club will support the project of the City Club, health and welfare organizations and other efforts to secure a full-time health officer for Albany.)
4. By appointment of additional inspectors in the Health and Building Departments.
5. By assigning one or more members of the Board of Health to supervision of housing administration.

II REMODELING AND STRENGTHENING OF PRESENT LAWS AND ORDINANCES TO INCLUDE THE FOLLOWING AMENDMENTS

1. *Overcrowding*:
   No room in a residence building shall be overcrowded. Each person living or sleeping in such room shall have an air space allowance of not less than 500 cubic feet.
2. *Water-Closet Accommodations*:
   (a) Water-closets existing out of doors, except where connection with a public sewer is impracticable, shall be condemned.
   (b) There shall be a separate water-closet for each family in every private dwelling occupied by more than one family.
   (c) Every water-closet compartment shall have a window opening on a street, an alley, yard or court, or shall have an opening on a vent-shaft.
3. *Water-Supply*:
   There shall be a separate water faucet to supply running water at all times for each family in every private dwelling occupied by more than one family.
4. *Living-Rooms and Sleeping-Rooms in Basements*:
   No room in a basement shall be used for living or sleeping purposes unless walls and floors are damp-proof and waterproof and unless provided with a window or windows opening on a street, an alley or upon a yard or court.
5. *Lighting and Ventilation of Rooms*:
   No rooms shall be used for sleeping or cooking purposes unless provided with a window opening on the street, an alley or upon a yard or court.
6. *Rear Houses*:
   Rear houses used for living purposes must meet all requirements of existing laws and ordinances affecting dwellings.

III STIMULATING INTEREST IN THE BUILDING OF MODEL TENEMENTS TO BE RENTED AT LOW RENTALS

1. Through city cooperation.
2. Through state cooperation.
3. Through the interest of philanthropic individuals and limited-dividend corporations.

IV AN EDUCATIONAL CAMPAIGN

1. Concerning duties and obligations of both tenants and landlords.
2. The danger of living in unsanitary and overcrowded houses.
3. Creating a public demand for better housing conditions.
4. Concerning the critical housing conditions of our colored population.

# Ornamental Lights Installed on Every Street by Benefit Assessments

*By* DUDLEY C. MEYERS
COMMISSIONER OF PUBLIC WORKS, OAK PARK, ILL.

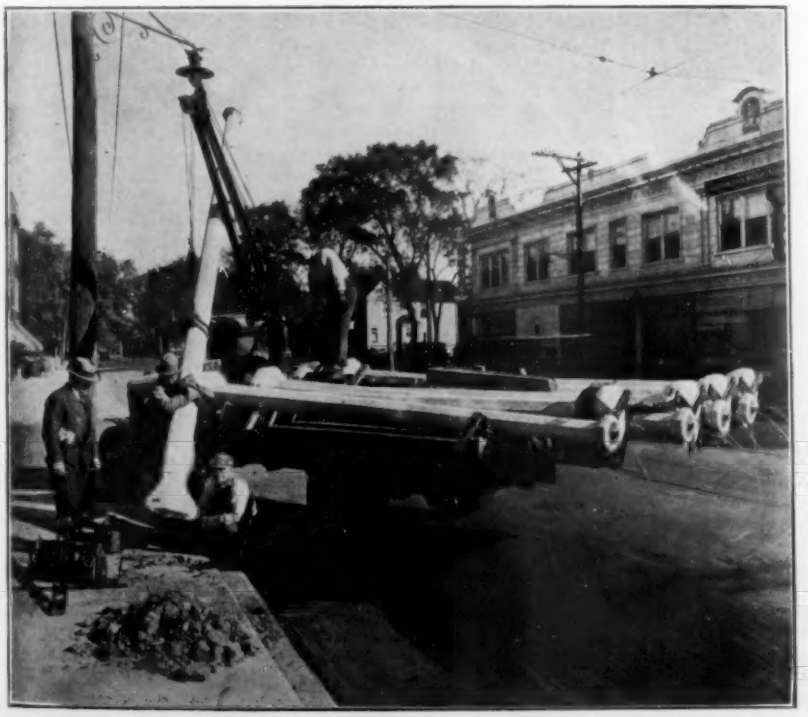
OAK PARK, ILL., has just completed the installation of an ornamental street-lighting system for the entire village, thereby providing proper lighting for the 107 miles of streets within its area. The work was done as a local improvement, the total cost of $1,036,000 being assessed against the abutting property according to benefit. This assessment was divided into ten installments.

Four classes of street lighting were installed, namely: business, boulevard, through street and residential. The costs per front foot to the abutting property owners for the various kinds of lighting were: Business, $3.44; boulevard, $1.98; through street, $1.98; residential, $1.528.

There are 3693 units, of which 721 are on business streets.

All lighting standards are of reinforced concrete, gray in color. The standards are set on separate concrete foundations. On the business streets the lighting standards are 15 feet in height, located opposite and approximately 120 feet apart. On the boulevards the lighting standards are 13 feet in height, placed opposite and spaced approximately 120 feet apart. On through streets the lighting standards are 120 feet apart, and on residential streets the lighting standards are 13 feet in height, set on a staggered spacing, approximately 150 feet apart.

TRENCHING FOR PARKWAY CABLE, OAK PARK, ILL.



SETTING CONCRETE STANDARDS FOR OAK PARK'S STREET-LIGHTING SYSTEM

The finished standards were loaded at the manufacturing plant upon a truck equipped with a raising windlass, and were erected upon a concrete foundation previously placed and cured. Concrete for the foundations was mixed at a central mixing plant in Oak Park and transported by truck to the hole.

The lighting fixtures placed on the concrete posts are of the lantern type, of solid cast bronze and octagonal in shape, with an ornamental "final" on the top and with ribs projecting to form ornamental horns at the top and bottom of the body.

The fixtures on the business street lighting posts are 41 inches in height, and on the boulevard, through street and residential street lighting posts, 32 inches in height.

The business street lighting fixtures are each equipped with a parabolic porcelain enameled steel reflector and a clear glass symmetric refractor. Each fixture has 16 glass panels of medium alabaster rippled glass, eight of which are in the body of the fixture and eight

CONCRETE STREET-LIGHTING STANDARD WITH LANTERN, OAK PARK, ILL.

in the top.

The residential district lanterns have eight glass panels in the side, the top being of solid metal. These lanterns are each equipped with two parabolic enameled steel reflectors, one above and one below the lamp, and also with a clear glass symmetric refractor.

The lamps in the business district are 600 candle-power; on boulevard and through streets, 400 candlepower, and on residential streets, 250 candlepower. There are 130 100-watt lamps in enameled steel reflectors installed in railroad subways.

Steel taped parkway cable was used on all streets excepting on main feeder lines and in sections where concrete sidewalks came to the curbing. In these locations lead cable with fibre conduit in concrete envelope was used.

The electrical energy for the system is 3-phase, 4-wire, 2300/4000 volts, 60-cycle, received over primary supply feeders of the Public Service Company terminating in disconnecting potheads in a substation which was built as part of this system. This is connected at the substation through suitable switches and protective devices to a primary bus comprising a part of the switchboard equipment in the substation, and from these bus bars is conveyed through suitable switches, control and metering devices to cables connecting to constant-current regulating transformers, which transform the energy to the proper voltage and amperage for transmission by secondary lead-covered cable in fiber conduit to tertiary transformers located in manholes, where it is again transformed to the proper voltage and current for the tertiary circuit cables which connect the tertiary transformers to the lamp transformers where used and to the lamp socket terminals.

All the necessary controlling, switching, metering, transforming and regulating equipment for connecting the secondary cable of this system to the primary supply feeders are contained in the substation building.

The lamps and lamp transformers where used are connected in series and operated in tertiary circuits; each circuit consists of such a number of lamps, either 100, 250, 400 or 600 candlepower, as operate without requiring a voltage in excess of 750 volts in any one circuit. Each group terminates by being connected to the secondary leads of a tertiary transformer in a manhole, the primary of which is connected to the secondary cable leading to the substation and connected to the constant-current regulating transformer.

The substation was constructed on village property adjoining the pumping station of the Water Department. In the substation were installed all of the regulating transformers, clock-actuated circuit breakers, overload circuit breakers, disconnect switches, current and potential transformers, watt-hour meters and other auxiliary and measuring apparatus.

The contract was let on July 6th, 1927, to the Electrical Contracting Co. of Chicago. Work was started on July 18th and was completed on December 17th. The Randolph-Perkins Co. of Chicago were the engineers for the lighting system, working in cooperation with the Commissioner of Public Works of the village. The standards were manufactured by the American Concrete Products Co. of Forest Park, Illinois, and the electrical equipment was furnished by Westinghouse, General Electric, and others.

The turning on of the lighting system was done at a special meeting of the President and Board of Trustees, at which several hundred citizens, representatives of organizations, etc., were present. At the proper time the President of the village touched a button which turned on the system and the largest village in the world was transformed from one of the darkest to one of the brightest spots in the country.

# "What Does it Profit a City to Become Big?"

THE stimulating paper under this title, presented by Ray M. Hudson, Chief of the Division of Simplified Practice, before the 1927 convention of the Pennsylvania Commercial Secretaries Organization, has been made available in multigraphed form by the United States Department of Commerce. Mr. Hudson suggests the likelihood that in time many people will find a limit to their patience or their endurance in the too thickly settled communities.

"They may find that the advantage of living in such areas are more than offset by the rising costs of residence, the inconvenience, the hazards, and the time lost in getting about through the whirling, swirling jams of humanity that pack the streets of our larger cities. It is conceivable that in time these people may *decentralize* themselves.

"In the meantime, there is nothing wrong in the efforts of the smaller communities to attract more people to them. In fact, if such efforts help to effect a more uniform distribution of population throughout the country as a whole, the result will be a more uniform distribution of prosperity and a more general elevation of our American standard of living. There are millions of native-born Americans in our large industrial centers who do not now enjoy the same fullness of life as do the inhabitants of the average town of 50,000 to 75,000 people.

"From this consideration of mere bigness in area, in numbers, and in similar measures of size, it is self-evident that the well-known American slogan of 'Bigger and Better,' when applied to the typical American city or town, stands sadly in need of revision! The emphasis is in the wrong place! It ought to read, 'Better, and thus Bigger!'

"And when I put 'better' first, I do it, *not* from any consideration of the moral aspect of the problem, but solely from the economic viewpoint." . . .

"It would, therefore seem advisable for communities to give more attention to improving conditions in their own economic as well as political boundaries, before devoting too much time and money to competing with other communities. True progress comes through looking within critically, looking forward intelligently, and moving on incessantly."

Mr. Hudson recognizes, of course, the importance not only of introspection, but of looking outside the home community and studying the drift or trend of things from other viewpoints. He discusses some of the chief economic factors such as taxes, the labor situation and potential markets, and concludes:

"The full facts as to the assets and the liabilities of your respective communities, courageously faced, will enable you to strengthen your weak spots, round out your community in terms of the best interests of all concerned, and thus make it attractive to the people who will be a further asset to you. It is through this intensive introspection, and consequent effort to improve, that your community will become better economically, socially, politically, and even morally. Size will then automatically take care of itself. The new order of the day—the new slogan—is 'Better, and thus Bigger.'"

# Sprinkling Filter Planned for Expansion

*By* HENRY R. BUCK

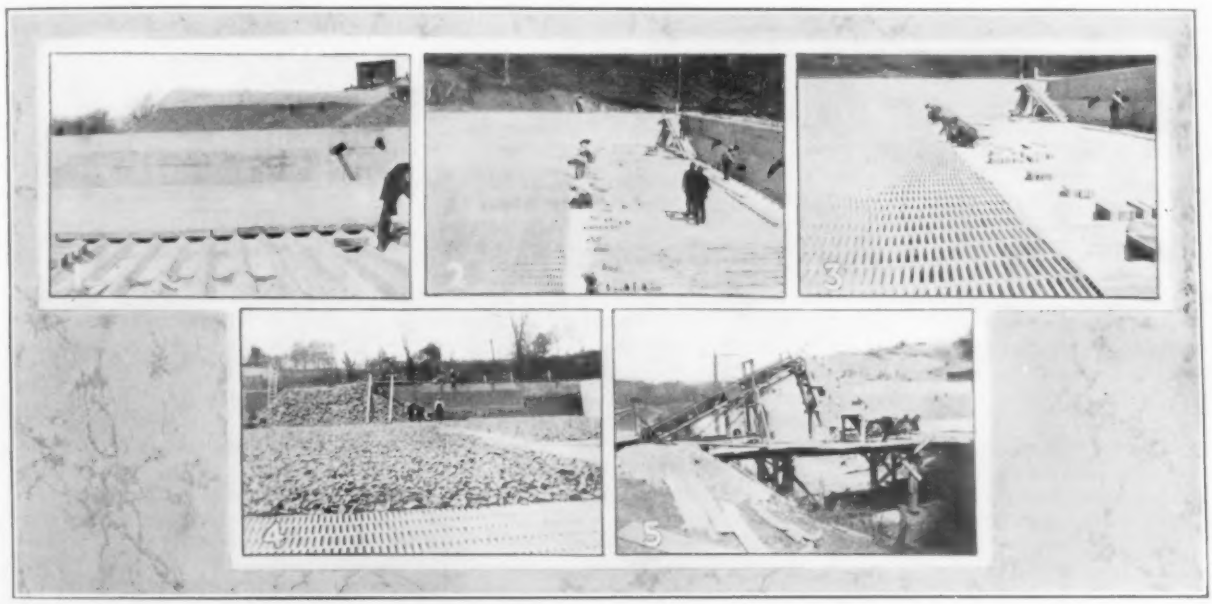
BUCK & SHELDON, CONSULTING ENGINEERS, HARTFORD, CONN.

WATERTOWN, a suburb of Waterbury, Conn., has an area of about 18,750 acres with a fire district, formed to finance a new water-supply, which covers 1,380 acres in the center of the town. The population of the town is about 6,000 and of the district 2,000. There are two large silk mills, the wastes from which are not to be connected to these sewers; otherwise it is a purely residential district, with the Taft School for boys by far the largest user of water. The district has at present 11.75 miles of highway with an assessable frontage of about 80,000 feet, and grand list of $3,569,000 and unused bonding capacity of $94,600 at the time the present plant was authorized.

Steel Brook flows through the center of the town and furnishes the only possible outlet for sewage. Though its watershed has an area of some 8 square miles, its entire dry-weather flow is often held back by one of the mills, and in any case is so small that the discharge of untreated sewage into it is wholly out of the question. Contact beds were considered, but were discarded because a higher degree of purification was desired than could be depended upon from this process.

Because of the large areas outside the present district limits which may later wish to use this sewer, the trunk sewer down the valley was made of generous size, the 20-inch tile on a 0.15 per cent grade below the lowest branch sewer being capable of caring for the sewage from 25,000 people (if ground water can be kept out), which would equal the sewage run-off from a closely built-up street system three times the present district mileage.

There is a future possibility that the sewage may all be carried south through the city of Waterbury and treated in a city plant, so that the trunk sewer has probably a much longer useful life than the purification plant, a fact which further justified its larger capacity.



CONSTRUCTION VIEWS OF THE WATERTOWN, CONN., SEWAGE TREATMENT PLANT

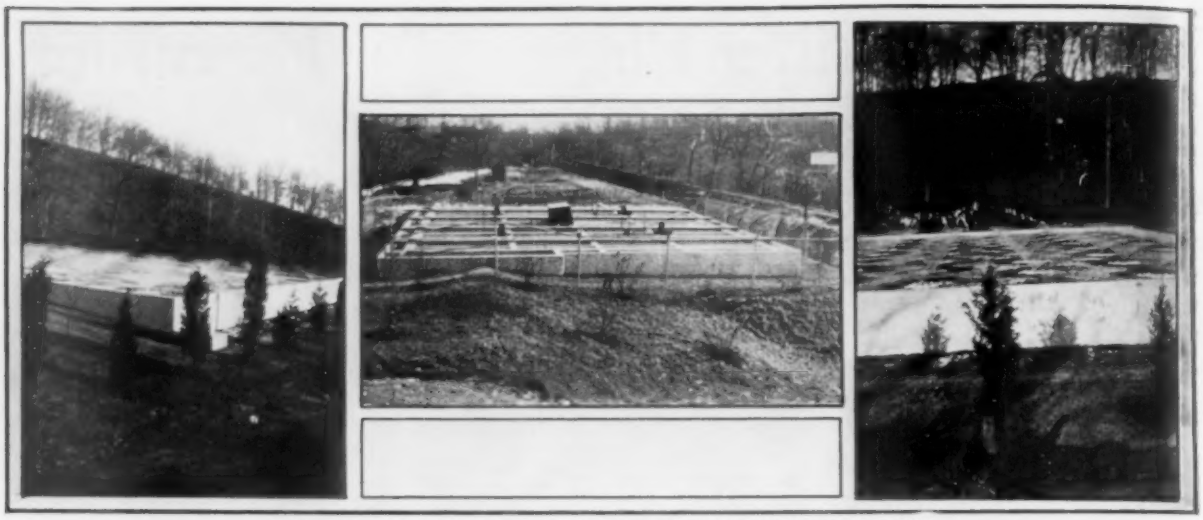
1. Concrete brick and precast supporting blocks, with Imhoff tanks in rear. 2. False floor showing openings to flushing gallery at right. 3. Laying 33,000 concrete bricks on false floor. 4. Covering false floor with 6 inches of trap rock tailings laid by hand; sufficient cobbles were not available. 5. Conveyor used to unload trap from cars

### Disposal Plant

For the present a population of 5,000 people was thought sufficient to plan for in the next fifteen years, with filters built for only one-third the capacity of the Imhoff tank, assuming a present flow of 200,000 gallons per day and an ultimate flow of 500,000. Accordingly, the tank was built with two units, each 20 x 39 feet 8 inches square with an over-all depth of 29 feet 2 inches, including a 3-foot freeboard above low-water level. There are two hoppers in each tank, each with a separate 8-inch sludge pipe discharging under a 7-foot head and able to drain the tanks below the slot level. The minimum liquid depth is 25 feet 3 inches, and provision is made for increasing the depth, if desirable, to 26 feet 6 inches.

The total sludge capacity of 11,880 cubic feet is equivalent to 5.9 cubic feet per capita for the population of 2,000 expected during the next five years, and 2.3 cubic feet for 5,000 people. Gas vents were given generous widths, a minimum of 1 foot 6 inches at the sides of the tank and 3 feet over the center, giving 30 per cent of the total surface area of the tank for scum. The sludge bed was built in two halves, each with an area of 2,175 square feet, or a generous 2 square feet per capita for 2,000 population, and there is room for enlargement when necessary.

Each tank has two flow chambers 6 feet wide with side walls plumb to a depth of 7 feet and hoppers below this, 4 feet 6 inches deeper to the bottom of the single 6-inch slots on each. This form of slot, with side slopes of 1.5 on 1, was adopted because experience has shown no clogging with this form, while the beam-and-double-slot type has given trouble. The capacity of each flow chamber is 9,750 to 11,750 gallons, the retention period with all chambers in



GENERAL VIEWS OF WATERTOWN, CONN., SEWAGE TREATMENT PLANT

use being 2.26 hours for a flow of 500,000 gallons.

A channel 1½ feet wide passes completely around the tanks, permitting reversal of flow and by-passing either tank.

Skimmer pipes were provided, but so far it has been easier to remove floating material by hand. Slots are provided over the gas vents, so that, if desired in the future, gratings may be put in to hold the upper surface of the sludge below low water mark.

### Grit Chambers

Two grit chambers are built at the end of the 20-inch sewer, only one of which will be used at a time, changing when the direction of flow through the tanks is reversed. Each is 5 feet 2 inches x 2 feet 6 inches, by 7 feet deep, with removable inclined racks the full depth of the pits. These have ⅜-inch x 1½-inch bars spaced 2 inches apart. Each chamber is drained to the sludge beds, and daily cleaning has been easy.

### Dosing Equipment

Two dosing chambers are provided, with independent 10-inch Pacific syphons operating on 8.7 feet total head. Only one sprinkling filter has been built, but the feed pipe for the second unit has been installed. The bed is 110 feet x 75 feet 3 inches, with ⅞-inch nozzles spaced 13 feet on centers over an average depth of 7 feet of 2½-inch crushed trap. The false floor is of concrete slabs 4 x 17 x 1 inches on trapezoidal ribs 2½ inches high with the top face 3 inches and the bottom face 8 inches wide. These as well as the floor blocks were pre-cast in steel plate molds, the supports being cast 5 feet long without steel, and by using calcium chloride as an accelerator the contractor was able to get two blocks per day from the molds, casting them in his boiler-house during the winter. The floor drains are pitched on a grade of 5 inches to the hundred feet, and the upper end of every drain is accessible for flushing, ventilation and inspection through an access tunnel under the wall between the two beds.

A recording gage is provided to indicate, by means of two pens on the same chart, whenever either dosing chamber is emptied. As each dose is about 3,000 gallons, the rate of flow is always known. At present, with about 600 people using the sewer, the tank fills about once an hour, so that the maximum flow is only at the rate of 72,400 gallons per day and the actual daily average is 21 doses, or 63,000 gallons per day. As the filter area is 82,775 square feet, or 0.19 acre, this indicates that the present rate of operation is 333,000 gallons per acre, or 47,000 gallons per acre per foot of depth, whereas the bed will care for over three and one-half times that, or 266,000 gallons per day, on the basis of 200,000 gallons per acre per day per foot of depth.

There is area available for three more beds, which would provide for 1,000,000 gallons per day, to serve which a second Imhoff tank would probably be built.

### Construction Features

As much of the 6-inch concrete partition wall was poured in winter, calcium chloride was used to accelerate the set of the cement. By pouring only on days when the thermometer was above 20°, heating the aggregate and water, and using one pound of calcium chloride to the bag of cement, a remarkably hard concrete was secured within 24 hours, though on cold nights a steam pipe was run into the tank and the whole top covered with tarpaulins.

It was specified that the form for the key at every vertical construction joint should be painted with bonding Contex, and the contractor was remarkably successful in getting tight joints with a minimum of labor in roughening the face of old concrete.

Contract drawings have been prepared for a secondary settling tank in two units, each 18 feet 4 inches x 25 feet, by 13 feet deep, with a centrifugal sludge pump, the house for which has been built. It is planned to build this tank as soon as funds are available, since it is recognized that when more buildings are connected to the lateral sewers and the load on the filter approaches that for which it was designed, the effluent may not always be satisfactory.

At present, however, Steel Brook is so highly polluted with dye-house waste from one of the silk mills, that the effluent is usually vastly better than the brook water.

### Financing

The theory of assessment has been that the district should pay the cost of treatment works, trunk sewers and maintenance by taxation on the grand list. The frontage directly benefited has therefore been assessed where sewers are actually built, at the rate of $3 per foot of abutting street frontage, with exemptions for corner lots and low ground. It is believed that this amount will, in general, cover the cost of the average small-sized lateral sewers, leaving the district at large to carry an increasingly large share of the cost as the size and importance of the collecting sewer increases.

The present length of sewer is 17,964 feet, and the cost has been about $75,000 for the treatment works and $80,000 for the sewer, including much rock excavation. The Barbara & D'Aurio Co., of Waterbury, were the contractors for the tank and filters, and several contractors built the collecting system, all under the supervision of Bronson E. Lockwood of Watertown, with Buck & Sheldon, Inc., of Hartford, as designing engineers.

# Governor Smith on Municipal Home Rule and Public Development of Natural Resources

IN the city of New York, charter provisions require that auctioneers' licenses shall be granted by the Commissioner of Licenses, but if auction sales are to be conducted after sundown a permit must be issued by the Mayor. In order to pass a local law to divest the Mayor of this trivial power, it would be necessary to submit the proposition to a mandatory referendum and to bring into play the entire election machinery of the city. This because of a provision in the so-called home rule law of the state which requires a mandatory referendum on a local law which "abolishes, transfers or curtails any power of an elected city officer."

This fact was cited by Governor Alfred E. Smith in his annual message, delivered to the 1928 New York State Legislature on January 4, as an illustration of need for granting broader powers of home rule to the municipalities of the state. On this subject of local self-government, the Governor said in part:

"Nearly four-fifths of the entire population of the state, or 8,500,000 people, reside in the cities. More than 2,600,000 reside in cities other than the city of New York, and this is more than reside in all other parts of the state. For many years there was a persistent demand that the cities be vested with a larger measure of power in relation to matters of local concern, and that the Legislature be relieved of the constant necessity of enacting laws in respect to local city matters, often of the most trivial nature.

"In response to this demand, the people of the state, at the general election in 1923, by an overwhelming majority, adopted a constitutional amendment, intending to confer home rule upon the cities of the state and to 'guarantee to them the right of municipal self-government.'

"The proposed amendment was approved by both of the great political parties, and in anticipation of its adoption a legislative commission was created to prepare the necessary legislation to carry the amendment into effect. A home rule law was accordingly enacted by the Legislature of 1924.

"I am informed, however, that this measure, as finally enacted, does not confer upon cities the broad powers of local government contemplated by the amendment and proposed to the Legislature by the commission, that it leaves the jurisdiction of the Legislature and of the cities in respect to local city matters undefined and confusing, and that the grant of power, even to the extent contained in the home rule law, is so limited and restricted by provisions for mandatory referendum and otherwise that it is practically impossible for the cities of the state to enact local laws to effect material and necessary changes in their government."

## Growth of the "State Authority" Idea

**An outstanding feature of Governor Smith's message to the 1928 Legislature of New York State, excerpts from which are published on this page, was his advocacy of the "State Authority" idea as a means of public control and ultimate public ownership of important development projects. Reciting briefly the history of the Port of New York Authority as an example of this method of reducing the pressure on the public purse for necessary revenue-producing public improvements, the Governor said:**

**"The Port of New York Authority is an agency of two states charged by law with the duty of improving transportation facilities within the port. It is a body corporate and politic and by law is given the power to issue its own securities to provide the money for such development. The interest and sinking-fund payments upon the securities are met by the revenues derived from the enlarged and modern facilities thus created.**

**"Under the direction of the Port of New York Authority, there are now in the course of erection three bridges between Staten Island and New Jersey for vehicular and pedestrian traffic. In the last six months ground was broken with appropriate ceremonies for the construction of what will probably be the largest suspension bridge in the world, between Fort Washington on Manhattan Island and Fort Lee on the Jersey shore.**

**"An attempt on the part of the states themselves to finance these projects from current revenues would have placed an unwarranted burden upon our people. They can be and are now financed with a comparatively small appropriation from both states and by the issuance of bonds guaranteed by the earnings of the property and not dependent upon the states or their taxpayers for either interest or sinking-fund obligations.**

**"So popular did this theory of public development become that there was created by law the Port Authority of the Port of Albany, embracing the cities of Albany and Rensselaer. That development is now well under way, receiving the cooperation of the Federal Government by the dredging of the Hudson River for deep-draft vessels.**

**"At the last session of the Legislature your honorable bodies by law set up an authority between this state and the state of Vermont for the construction of a vehicular and pedestrian bridge over Lake Champlain, intended to promote the convenience of the citizens of both states and bring the states into closer touch.**

**"When the bonds for all these bridges are retired the bridges will be the property, free and clear, of the states which they join—the Champlain Bridge at no cost to the state, and in the case of the New York and New Jersey bridges for a comparatively small initial appropriation which can be returned from tolls."**

### For Village Home Rule Also

In addition to urging action by the present session of the Legislature to remedy these handicaps to efficient city administration, the Governor urged similar relief for the villages:

"To prevent the constant reappearance of bills intended to provide for minor improvements in villages, a grant of home rule should be made to villages. The village trustees can then attend to the minor details of running the business of a village without seeking the authority of law. To my way of thinking, it seems a bit ridiculous to require a legislative statute to provide for additional paving, extension of water lines and other details of local administration in the villages throughout the state. These purely local matters should be left to the village authorities themselves."

### Local Regulation of Public Utilities

Criticism of the state's administrative policy towards public utilities was voiced by the Governor:

"In 1921 the state made a very radical change in its policy toward public utilities within cities. Up to that year the state respected the provision of contract between an operating utility and a municipality. Municipalities had control over their contracts. The state took it away from them at that time and undertook to represent the locality in its contractual relationship with the public utility corporation. That was a mistake and a violation of the fundamental principle of home rule. Not only did it deny authority to the city, but it took it away from it. The legislation of 1921 should be repealed and control over contracts should be returned to the municipalities which are a party to the contract.

"All along I have stood for the right of a locality to regulate a public utility operating wholly within its borders upon the theory that the service is being rendered to the people of a single city and the elected officials of the city are held responsible in the first instance. The people look to them and not to the state. Further, local officials have been prone to blame the state when service and rates are not what the people believe they should be.

"There is also no reason why the state should not delegate its police power for the regulation of public utilities to the properly elected officials of a municipality.

There are many cities in the state which may not desire that power. In order not to infringe upon their home rule prerogatives, it might be well to frame a statute in such a form that it would require the municipality to take an affirmative stand and by resolution of its local common council seek permission from the state to exercise the state's authority over public utility corporations entirely within its corporate limits. In the absence of a specific request, the control should remain with the state.

"Transportation is so vital to the needs of every community that there is no reason why a municipality should not be permitted to supply it to its citizens. If that be true there is no reason why a city should not be permitted to operate public busses for the convenience and comfort of its citizens. There is nothing new or revolutionary about the theory of municipal ownership. New York City owns and operates ferry boats. Four cities of the state own and operate their electrical plants. A large number of villages either generate their own electricity or own a distributing system. Some villages operate gas plants.

"I simply recommend that the principle now in practice in New York City and in other parts of the state be extended to all forms of utilities and be made applicable to all cities wherever there is an expressed desire on the part of the majority of the citizens for the exercise of such a right."

**Development of Natural Resources Proposed Under a State Power Authority**

Urging that the principle so successfully applied to the Port of New York Authority be extended to the development and control of the state's water-power resources, the Governor said:

"In 1921 the Legislature saw no obstacle to the setting up of the Port of New York Authority, and to the approval of a comprehensive plan for the development of that port which, when carried into effect, will cost upwards of three hundred million dollars.

"Even more recently the Legislature did not oppose amending that plan and conferring upon the Port Authority the power to issue its bonds for the construction of bridges between New York and New Jersey, to cost more than one hundred million dollars. All of the bonds sold for the progress of this great public work have been offered to the public upon the basis of the ability of these public improvements to earn the interest and sinking-fund charges.

"What is the difference between a joint undertaking like the development of the Port of New York and the construction of these bridges, and the development of water power at sites now in possession of the people of the state? I see none. In fact, I am convinced that the economic worth of such development can be as easily demonstrated to prospective bondholders as can the economic worth of the developments at the Port of New York. Moreover, I have such confidence in this method of financing that I believe that unless and until such economic proof is forthcoming, no move should be made by any authority set up by the state to offer its bonds to the public for investment.

"Following, therefore, the charted path and taking a lesson from actual experience, why should we not set up in this state a New York State Power Authority which would be a public corporation, municipal in character, having no stockholders, deriving its powers from the state and having duties specifically imposed upon it to take over and develop the power resources of the state? Such a corporation should be given the power to issue bonds exempt from state taxation and secured by the revenues to be derived from the improvements when made. . . .

"The question of waterpower development at the present time is receiving nation-wide attention. Giant power combines naturally will stand against the proposal of a public authority, but it is difficult to be in sympathy with their viewpoint because it is purely selfish. On the other hand, there is today an insistence and growing demand for the development of these power resources by the rightful owners—the peoples themselves.

"I think you will have to agree with me that all the talk we hear about regulation after we have parted with the sources of power is more or less academic discussion of the general principle of rate regulation. As it is we have not been any too successful with rate regulation.

"Should these great power resources become interstate, as is proposed in some of the giant power schemes now planned, it is possible that we may lose our rate control over them altogether just as we have over the railroads in the state which are now deemed by a decision of the United States Supreme Court to be engaged in interstate commerce and therefore not subject to regulation by the state.

"There is one sure way to get the full benefit of hydro-electric energy for the small storekeeper, the small home owner and the people on the farm, and that is to have the state retain the ownership not only of the source of the power, but of the development works. The comprehensive plan prepared by the Power Authority can deal with the distribution after study and research. It will have to be a part of the plan which in its turn will have to receive legislative approval before it can be effective.

"No harm can come to the state by a trial along the same lines already adopted for other great public developments by means of an Authority. Nobody can honestly and conscientiously oppose it unless they belong to that reactionary Bourbon group who are against public ownership or public development of any resource."

# Intensive Survey of Housing Needs by Chamber of Commerce Increases Local Building Activities

HOW can a town or city increase its building when construction tends to taper off?

Perhaps various municipalities may find the answer to this question in the recent experience of Fullerton, Calif., a town of about 10,000 population.

About a year ago it was felt that a decided effort should be made to increase the local building operations, and after considerable discussion the Chamber of Commerce decided to undertake the matter of securing such an increase. Also, it was felt that the most substantial and desirable increase could be secured by inducing more people to erect homes.

But how could this be done? Further discussion developed the thought that there must be many people in the city who were renting homes who could put up structures of their own. Why not make a survey of these people, arrange financing for them and then go after them hard for the purpose of inducing them to start home construction?

This plan was adopted. Each member of the Chamber of Commerce made a report on his employees, business associates, friends and relatives who were permanently in business in the city but who did not own their homes. These reports included information regarding each individual's family, his income, his probable financial condition, his lodge affiliations, the probable permanency of his local business connections and so on and forth. Of course, only top-notch people were included in the survey—people who could well afford to purchase homes.

In this way it was found that there were 350 people in the city who should but did not own homes. A committee from the Chamber of Commerce went over all these reports very carefully and picked out the best of them and then urged them to buy homes. This method was very successful, as in less than nine months after starting the plan, 89 of the 350 people on the survey had started home construction, and the building permits of the city increased three times over what they were in the same period of the previous year.

The homes put up in this manner were valued at from $4,000 to $12,500 each. The financing provided for comparatively small down-payments, because of the high character of the home buyers. This financing by a local company ran from $400 to $1,000 per home as down-payments.

Of course, this big increase in home building boosted all business in the city, because it brought more workers into the town and made the whole town more optimistic and enthusiastic. At the end of the nine-months period, business had so increased that there was not a desirable house or apartment for rent in the town, and the building of business blocks and apartment houses also increased greatly.

In order to further stimulate the local interest in home construction, the Chamber of Commerce bought a very desirable lot in a high-class residence district and put up a model home on this property. All local builders were given something to do in the construction of this home, and the Chamber of Commerce used full-page ads in the local paper to tell about the progress of the construction work. In these ads the names of the local builders and contractors were played up strongly.

FRANK. H. WILLIAMS.

# Snow Removal in Philadelphia—II

*By* ARDIER M. SOBY, CHIEF,
AND
JOHN H. NUTTALL, PRINCIPAL ASSISTANT ENGINEER,
BUREAU OF STREET CLEANING, PHILADELPHIA, PA.

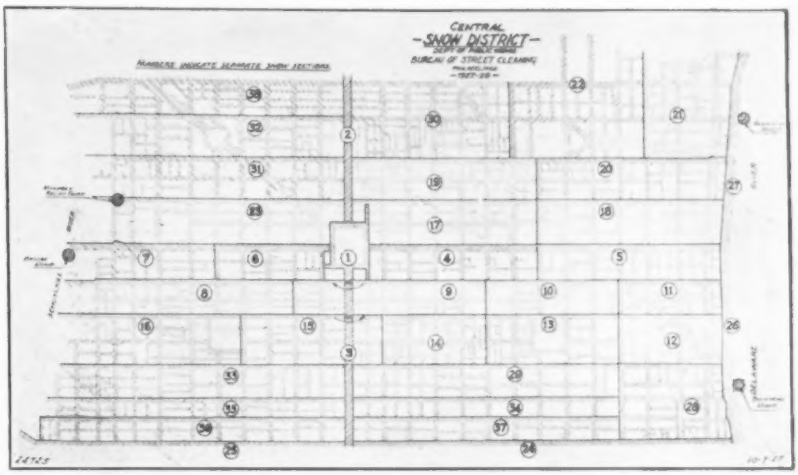
### Operation of the System

ALL plans have been prepared before the advent of the snow season, and the snow organization is prepared for the earliest storm. The weather records are received each day in the office of the Chief, which is in personal contact with the local United States Weather Bureau, which offers the fullest cooperation. "Stormoguides" (the trade name for an aneroid barometer with a legend indicating the weather to be expected from various movements of the needle) are installed in the main office of the Bureau and in the homes of the Chief and his principal assistant. This instrument, checked by the direction of the wind and the humidity, has proved remarkably accurate in forecasting the weather for twelve hours ahead.

A night repair force is maintained at the Bureau garage, and a responsible man at the garage is instructed to notify the superintendent of motor vehicles immediately when snow begins falling during the night. The superintendent of motor vehicles, upon deciding that the snow is more than a flurry, calls the Chief, the principal assistant, and the chief telephone operator, who immediately proceed to the main office. The superintendent of motor vehicles immediately calls the necessary mechanics and and drivers and sends trucks to their homes to transport them to the garage.

The city operates four-wheel flushers and six-wheel tractor-trailer flushers. It is not practical to keep the plows upon the flushers at all times, for flushing is conducted irregularly throughout the winter, as the temperature is variable. Plows are maintained at all times upon a number of tractor units of tractor-trailer flushers, and plows are mounted upon four-wheel flushers, upon which "A" frames are maintained, when snow is imminent or immediately after it has begun to fall. The plows are mounted at once upon these flushers if snow begins to fall during the day, and are usually mounted at once if snow is predicted at night, in which case the garage force is held in the evening even though the storm has not commenced. The garage force also moves the snow loaders from the garage to the central snow-removal area.

It is not practical to plow streets during the heavy traffic hours, so that plowing does not begin until night if snow is falling during the day. Plowing is begun, if traffic permits, when the snow reaches a depth of one inch, and usually




THE CENTRAL SNOW DISTRICT IN PHILADELPHIA, NUMBERED TO SHOW THE SEPARATE SNOW-REMOVAL SECTIONS

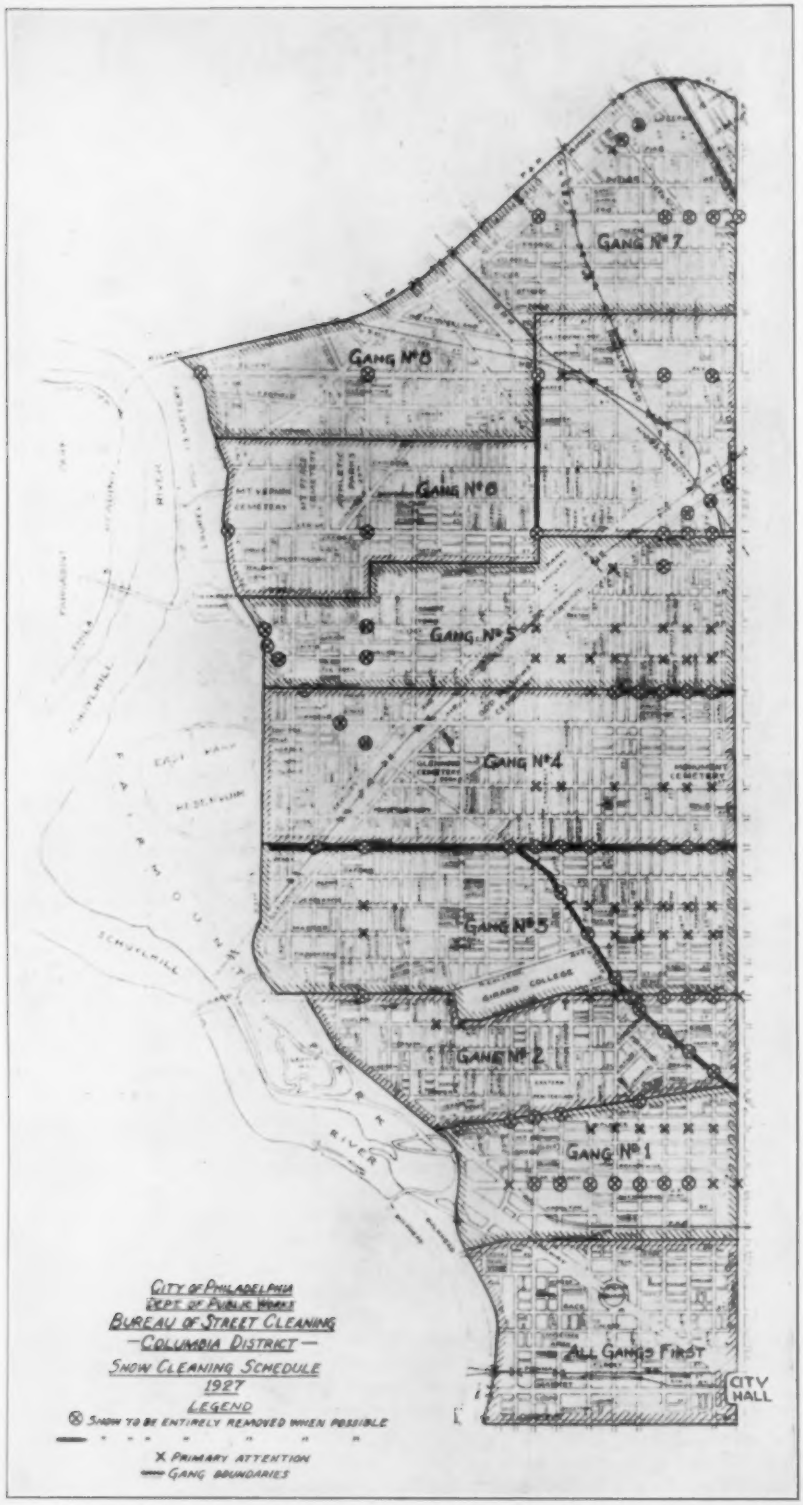
continues between the hours of 7 P. M. and 8 A. M. Streets from which the snow has not been lifted since a previous plowing are plowed each night until the street is finally cleaned. The plows operate upon definite schedules, and gasoline and repair service is furnished. Replacement plows are available for any plows that are placed out of commission.

The city street-cleaning forces of the four central street-cleaning districts are placed upon crossings in the central area immediately when snow falls during the day, and a sufficient emergency force is retained on the work all night. The street-cleaning forces are held at the district stables until 9 P. M. when snow is anticipated during the evening. These forces have been worked fifteen hours per day for eight straight days during a snowstorm.

The telephone operator, upon reaching the main office, immediately begins calling the assistant telephone operators, supervisors and important members of the snow-cleaning organization. The progress of the storm is watched, and the Chief decides upon the time when the contract forces shall begin work, after which the operators notify all contractors and inspectors from prepared lists.

The contractors begin work usually at 7 P. M., if snow falls during the day, and 12 midnight or 6 A. M., on the following morning, if snow falls during the night. These hours are contingent upon the plowing having progressed to a sufficient point to permit loading. The contractors send scouts with trucks to collect laborers, and report in person at the Bureau office, where an inspector is provided, and they are assigned to a specific district. Organizations of strong contractors are assigned to the most important districts in the order of their arrival, and inspectors are not usually assigned twice to the same contractor. The forces of the various contractors wait upon the Parkway west of City Hall, where they do not obstruct traffic, until they have been assigned to a section. Shovels are brought in municipal trucks from the Bureau storehouse to a storeroom in the City Hall, from which they are issued to the contractor's representative and taken in the contractor's truck to his snow section. A labor agent of the Bureau is stationed upon the first floor of the City Hall to hire laborers desiring work and to assign them to the various contractors. A limit is placed upon the contractor's force in any district, according to the depth of snow and the estimated amount of work necessary for removal in order to prevent excessive removal costs.

The municipal snow loaders are used upon the two wide streets at the beginning of the storm, as they can operate on these streets without interference with traffic. All other streets in the snow-removal section are so narrow that the operation of snow loaders upon them interferes with traffic, and loaders are therefore operated on these streets only at night, when traffic is light. The number of snow loaders is not sufficient for the efficient removal of snow in a city as large as Philadelphia, and it is desirable that the number be increased in order to provide against labor deficiency.




**ONE OF THE ELEVEN REGULAR STREET-CLEANING DISTRICTS, SHOWING DISTRICT SNOW-CLEANING PROGRAM**

The method of operation depends upon the character of traffic. Snow may be removed best at night and on Sunday, and work during traffic hours is usually confined to the section south of Walnut Street and north of Arch Street. The forces from these sections are employed in the central section between Walnut and Arch Streets at night and on Sunday. A single cleaning does not usually suffice, for the Bureau is far more prompt than the property owners, who are responsible for the removal of snow from their sidewalks. It has been frequently necessary to clean streets four and five times because of snow shoveled from sidewalks into the cartway after the initial cleaning, in spite of requests for cooperation broadcast from four of the principal radio stations in Philadelphia at frequent intervals. A municipal ordinance provides a penalty for failure to remove snow from the sidewalks within six hours after the snow has ceased falling, but this ordinance is poorly observed by the citizens. A representative of the Bureau of Police is on duty in the office, and traffic jams occasioned by the snow-removal work are relieved by mutual arrangements of the two bureaus on the scene. A representative of the Philadelphia Rapid Transit Co. cooperates in a similar manner from his post in the office.

### Disposal of the Snow

It is desirable to dump snow into manholes adjacent to the work, in order to economize on hauling time, but it is not practical to utilize this method of disposal in Philadelphia, because the streets are too narrow and the sewers in the central section too small. Snow is therefore transported to dumps upon the Delaware and Schuylkill Rivers and deposited in the rivers. All snow from the western section is dumped from the Market Street bridge into the Schuylkill River. The bridge is provided with snow manholes in the south sidewalk. These manholes are covered when not in use, and a force of city laborers is used to assist in unloading. A watchman's box with telephone connections is located at this bridge at the beginning of the snow season and removed at the close. Police and inspectors of the Bureau are on duty at all times to facilitate traffic during the unloading. The trucks are detained upon the bridge approach until a sufficient number have arrived to occupy all manholes, and traffic is then halted and the trucks dumped.

This general method is varied to suit special traffic conditions. A large manhole at 23rd and Arch Streets is used as a relief dump, and trucks are routed to this manhole when congestion at the bridge becomes too great. The amount of snow dumped from this bridge during a heavy storm is sufficient to fill the river to the height of the bridge.

Snow from the eastern section of the snow district is dumped from the Delaware River bulkhead into the river at Vine and Pine Streets. Watch-boxes and telephone connections are provided at each dump. The deliveries at these dumps are so great during a heavy snowstorm that the snow cannot be dumped into the river, and trucks are dumped upon the street when necessary to prevent congestion. Snow dumped in the street is deposited in the river by clamshell bucket truck-cranes.

The telephone connection at each dump enables the supervisor to keep in constant communication with the main

office and permits trucks to be routed to any of the three dumps when any dump becomes too congested. Trucks are routed from the work to the dumps via streets where the least congestion will be caused during traffic hours. Sewer manholes adjacent to the work are used at night and on Sunday when it is possible to do so without interference with traffic.

After the central district has been cleaned, the cointractors' organizations are diverted to the suburban districts, an effort being made to assign each contractor to the district nearest his yard location.

Conditions in Philadelphia render snow removal after the expiration of a week of doubtful value, and the work is usually stopped at the expiration of this time even if the entire schedule of removal has not been completed. A tractor grader is used after the snow has hardened, to remove it from the surface of the street at special locations.

### Cleaning Following Removal

The streets are always dirty after the snow has been removed, and dry broom cleaning is not sufficient to remove the accumulated dirt. The flushers are placed in commission as soon as plowing has been completed, and all streets are flushed on the first night following the snowstorm when the temperature is over 32° F. Hose gangs are also operated for this purpose, and in some cases such gangs are used to rid the streets of a depth of snow too small to require removal by grading methods. Great care is required in the use of water during the winter, for it is easy to splash pedestrians and to leave a film of ice upon the street. The weather forecasts are carefully observed and checked before this work is begun, and every effort is made to perform it at hours when vehicular traffic is at its lowest.

### Control of Operation

The district supervisors are in constant touch with the work and report progress to a recorder in the main office, who compiles charts showing the progress of the work in the central snow-removal area and suburban districts, and also of the plowing and cleaning of crossings. The work does not stop after the streets have been cleaned once, for they are then inspected to determine which must be cleaned again because of snow thrown into them after the initial cleaning. Progress charts are made each day to show this phase of the work. These charts are of great assistance in routing and controlling the work.

The general scheme for each day's operation is designed at a conference at 5 o'clock each morning and 5 o'clock each night and given to the contractors and inspectors, who report at 6 A. M. and 6 P. M. each day that the work continues. Representatives of the Bureau of Police report traffic conditions to the Police Lieutenant in the office, and representatives of the Bureau are immediately assigned to relieve conditions that require adjustment. The supervisors at the dump telephone conditions that require immediate attention, so that prompt measures may be taken to remedy them.

The entire executive staff remains on duty in the office or field at all times until the work is completed. Folding cots and blankets are available, and coffee is served at all hours. Cots and blankets are also available at the municipal garage for the plow operators and repair men, who are almost constantly on duty.

### Finance and Accounting

The Municipal Council appropriates $5,000 in the yearly budget for the removal of snow, and contractors work with no legal assurance that they will be paid for their work. Money to pay the contractors is usually appropriated by Council during the late spring following and becomes available in July. This system would cause the collapse of snow-removal work in the event that Council failed in any year to appropriate the money to pay the contractors.

The ordinance appropriating $5,000, which is usually consumed for expenses of the municipal forces, provides that the contractor shall be paid 50 cents per hour for each laborer he provides and $3.50 per hour for each 5-ton truck. The price for labor is inadequate, especially when a deep-drifting snow causes the transportation companies to bid high for labor. The price for trucks is sufficient to secure an unlimited supply. These factors make it necessary to restrain the contractors from supplying more trucks than are necessary and to use every means to induce them to supply the necessary labor.

FOUR-WHEEL FLUSHER SNOW-PLOW IN ACTION

The inspector in charge of the snow section hands each laborer a check and keeps an account of the time made by each man. The checks are of pasteboard rimmed with metal, and those given to each contractor are all in the same hundred. A check of separate color is used for each snow during the year, and all checks returned are destroyed in order to prevent duplication. The sheet filled out by the inspector lists each man and the time he makes, and the contractor and inspector check the sheet on their twice daily visits to the office. The sheet is signed by the inspector and contractor when they agree upon the account. The supervisor checks the inspector's account upon the work, and special checkers are detailed at odd intervals to the different sections.

It is difficult to keep a true account of laborers, in spite of all precautions, as they use every expedient to absent themselves from the work because they are frequently ill-clothed and hungry. Some expert snow lifters endeavor to obtain checks from two or more contractors and to spend a sufficient amount of time in each section to prevent detection. The snow lifters demand pay from the contractors at the end of each day's work, and payment is made by the contractors on the street.

A card is issued for each truck. The card notes the time the truck reports and is released, and provides spaces for punching the number of loads made. A duplication of the card is retained by the contractor. The difficulty in securing labor necessitates the maintenance of a ratio of not more than one truck to six men, excepting under special circumstances.

The payment for trucks and laborers upon a load basis is not advisable in Philadelphia, for it would be difficult to secure an adequate force in the event of light snows. The removal of snow by contractors upon competitive bidding on the cubic yard or inch fall basis is not

SNOW LOADERS IN ACTION ON PHILADELPHIA STREETS

LOADING TRUCKS BY HAND, BECAUSE OF INSUFFICIENT NUMBER OF MECHANICAL LOADERS

desirable for the same reason, as many contractors would bid low prices and fail to conduct the work properly when they found it could not be done at a profit. The previous method was originally used in Philadelphia but was abandoned some years ago, and the present method as strengthened and reorganized has proved successful.

### Cleaning Street Crossings

The forces of the eleven regular districts into which the city is divided are engaged in cleaning crossings while the snow-removal work proceeds in the central portion of the city. The work of refuse removal is continuous under all weather conditions, and men and vehicles must be added to the collection forces during and following snowstorms. The actual street-cleaning force of the Bureau of Street Cleaning, aided by forces of the Maintenance Division of the Bureau of Highways, is employed upon the work of cleaning snow from crossings, trolley loading stations, inlets and fire-plugs. The snow is not removed from the street, but is shoveled and swept back into piles.

Crossings are cleaned for the full width of all sidewalks, but to a width of at least 6 feet where the sidewalk is narrow. The snow removed from this strip is placed back of the building line of intersecting streets and not piled at the intersection. Trolley loading stations are cleaned between track and curb for the full width of the car in use on that particular street. The snow is removed for a distance of 5 feet on each side of a fire-plug and for 5 feet on each side of inlets. A gutter 18 inches wide is also opened for an additional distance of 10 feet above all inlets.

This cleaning work is scheduled in advance. The men are withdrawn from the regular cleaning work as soon as snow starts to fall and are detailed to the cleaning of important trolley loading points and intersections on a regular schedule. The gangs are assigned to specific districts, in which every crossing is cleaned as soon as the primary important points have been finished. The forces are assigned to the removal of snow from important intersections and in front of churches and places of amusement after the regular crossing schedule has been completed. Patrolmen are assigned to maintain all crossings in good condition after they have been cleaned by the gang. Contract laborers are supplied to the district superintendents for this work when possible, and contractors' gangs are supplied to the districts for the cleaning of intersections after the snow-removal work in the center of the city has been completed.

The district forces are kept continually at work until all crossings are cleaned, and the hours of duty are usually increased from the regular nine hours to from 6 A. M. to 9 P. M. All street-cleaning men must be ready to report at any hour of the night when snow begins to fall, and must report at the stable at 6 A. M. on the morning following a snowstorm, unless notified to report at an earlier hour. The men are usually held at the district stables in the early evening if snow is expected at night.

The municipal district forces are assigned to street-cleaning work as quickly as the ground becomes uncovered, and every effort is made to remove the accumulated débris from the streets when the disappearance of snow makes it possible. Flushers, hose gangs and machine-broom gangs are used whenever the weather permits. It is not possible to clean all streets immediately after a sudden thaw, and the principal streets are cleaned first in the order of their importance in this event.

The principal roads used by the collection vehicles from the collection areas to the dumps are plowed by Bureau plows on flushers. The 10-ton Caterpillar tractors regularly used upon the important dumps are employed to open heavily drifted roads when necessary.

### Conclusion

The system employed in Philadelphia is in many respects not ideal, but has been found to be best suited to the peculiar conditions encountered in this city. The snow organization was reorganized at the beginning of the present administration, and the rapidity with which snow has been removed from the central area since that time has elicited favorable comment from Philadelphia papers and those of other cities.

Snow removal has become a necessity in the modern American city, and it is probable that snow equipment awaiting action, like fire apparatus, will be common in every city during the next decade. It is the desire of this Bureau to avoid excess as well as inadequate service, and our hope is that the legislative body will find it possible to provide sufficient equipment for economical, efficient and prompt removal of snow over a rational area.

DUMPING SNOW FROM MARKET STREET BRIDGE INTO THE DELAWARE RIVER

# An American City

## *Conversation Overheard in a Pullman Smoker Between an English Visitor and an American Business Man*

*By* J. FRANKLIN BELL

LIEUT. COLONEL, CORPS OF ENGINEERS; ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA, 1923-7

*Englishman.*—If you wouldn't mind, old chap, I would jolly well like to ask you some questions about your home city. I am getting together some data about municipal matters, budgets, customs, and how people in American cities live and spend their money.

*American.*—All right, go ahead.

*E.*—How large is the population of your city, and what is the total of the municipal budget?

*A.*—We have about three-quarters of a million population now, and the total annual budget is nearly forty millions. The taxes are awful.

*E.*—Do the people have much money to spend over and above domestic necessities and taxes?

*A.*—Quite a lot. Nearly everybody has an automobile. Many people have elaborate houses and wear fine clothes. The ice cream parlors do a flourishing business. We drink a bit, smoke a lot, and the country clubs have waiting lists. We spend a lot of money on movies, and the football and baseball teams draw good gates. We are good spenders, all right.

*E.*—How are things managed? Who is in charge of the various matters, and how much do they cost?

*A.*—Well, that depends. Take the University football team for example. They have an old-time star by the name of Jones for head coach, Brown is coaching the line, Smith is runinng the ends, and Daly is polishing up the backs. Some combination! They ought to turn out a good team, unless the material is bum. It will cost a lot of money, of course. I understand Jones gets $15,000 for three months' work, but he is worth it, and Brown gets $10,000 for coaching the line.

*E.*—Quite remarkable. Is your football game so complicated?

*A.*—Not so very. I once overheard a great line coach say that a linesman has but three things to do—to go straight ahead, go to the right front, or go to the left front, but that he had to do them darned well. The players have to be in good physical condition, so they can run and tackle, and two or three of them have to be able to punt. There are only eleven players. A good many substitutes are needed.

*E.*—The coaching seems to be a bit expensive, eh, what? How about the baseball team?

*A.*—Oh, they have Jenkins as manager, Harris is captain, and they have some old-timers coaching the pitchers and catchers and scouring the bushes for ivory. I don't know how much they pay them, but some of those baseball men get big money.

*E.*—They seem to have quite a staff, don't they? Is the game very difficult to learn?

**Costly Football Coaches and Poorly Paid Municipal Hacks**

**Big Spending to View Civic Beauty Abroad and Small Spending to Create Civic Beauty at Home**

**These and other topics of importance to city officials and civic organizations are discussed in this Anglo-American exchange of ideas on municipal progress.**

*A.*—No, it is simple enough. They say there is a lot of inside stuff, but when one boils it down, about all a baseball player has to do is to catch the ball, throw it, hit it, and run. The players have to be good, though, to make the team, as there are only nine players. They have a few substitutes and extra pitchers and catchers.

*E.*—Quite astonishing, really, that you spend so much money to coach a few men to play a simple game. You Americans certainly spend your money freely.

A.—You bet. The best is none too good for us. If we have a team, we want a good one—one that will win.

*E.*—How about the team, or organization, that runs your city affairs? Do you have a lot of highly paid experts to run it and coach the employees?

*A.*—Well, we have a Mayor and a City Council. They are elected. Then we have several thousand employees. I guess you wouldn't call the Mayor and members of the Council experts, but they do fairly well, I believe, and things are fairly clean in our city. Some cities have a lot of graft, from the rumors one hears. Things are much better than they used to be—probably not nearly so much graft and corruption as some people think. We don't pay very large salaries, though. Most of the men in charge of the various departments are good men, with experience. The public takes up so much of their time they don't have much chance to plan and study, even if they were experts.

*E.*—Have the Mayor and members of the Council had experience in what you Americans call big business?

*A.*—Some of them have. It is hard to get big business men to take municipal jobs. The salaries are so small that they cannot afford it, and then most men don't like the publicity and criticism. Big business pays the salaries—$25,000, $50,000, and even higher. The city government cannot afford to compete with big business—our taxes are awful as it is.

*E.*—Do the big business concerns keep expenses down by paying low salaries?

*A.*—No, they depend on their high-salaried men to reduce the cost of production and administration. When they find that some branch of their business is not being run economically, they hire experts to find out why.

*E.*—Quite interesting, eh, what?—that you pay large salaries in big business to keep expenses down, and low salaries in municipal employment to do the same thing.

*A.*—Well, it may look odd, but we don't want a lot of highbrows telling us how to run our city. We Americans have a right to misgovern ourselves if we want to. In some cities they have city planners, employed by civic organizations, that get up fine plans, but I understand that in some places they don't get along very well with the city officials, so nothing much comes of it. The city officials say the plans are visionary, impracticable, and full of errors, because the planners did not understand local conditions, laws, and limitations, and the planners say the city officials do not cooperate and are jealous of their rights and authority. It doesn't always work out well, for some reason. Maybe some of the city planners are theorists and don't know much about administrative matters, anyway. Then they are continually harping about beauty. People get fed-up on their propaganda.

*E.*—Quite interesting, quite. Don't Americans appreciate beauty?

*A.*—Sure we do. We spend all kinds of money for beautiful clothes and jew-

elry for our beautiful women, for beautiful furnishings for our homes, for snappy-looking automobiles, for fine pictures, movies with elaborate scenes, etc. Why, we spend more money for beauty than any other nation spends for everything.

*E.*—Then, if I may ask, without offending, why don't you spend more money for civic beauty? Most American cities and towns that I have seen impress me as being a bit drab, don't you know. You can jolly well afford it, apparently.

*A.*—Say, we are the world's best spenders. Why, we spend hundreds of millions each year to go to Europe to see the beautiful buildings, views, and artistic things of Paris, Rome, and other places.

*E.*—So I have heard. Then, if I might suggest, why not spend part of those hundreds of millions on civic beauty here at home, and save the cost of travel?

*A.*—We Americans are travelers. We would rather pay fifteen dollars a day for a room at a summer or winter resort than to spend fifteen cents here at home to help doll the city up.

*E.*—I have been doing a bit of a calculation. If three-quarters of a million of you spend forty million dollars a year on municipal affairs, that amounts to about fifteen cents per day per person. Not so jolly much, eh, what? We have smoked up more than that while we have been talking. What-all do you get for your municipal expenditures?

*A.*—It doesn't sound like so much when it is put that way. Many of our people, rather poor people too, spend more than that on movies. I can't name all the things we get from our municipal expenditures—schools, streets, water, sewers, street lights, police and fire protection, houses for our criminals, aged, and insane, courts, street cleaning, inspections of all kinds, regulations,—say, we have enough regulations to fill a truck. Things are getting so complicated that one cannot help breaking regulations. We have the greatest assortment of traffic regulations known to man, and the congestion downtown is fierce. There are not enough traffic arteries anywhere. The city is laid out like a crazy-quilt. Every subdivision was made so that the developer could make the most money out of it. It takes hours to get about, and time is money to an American.

*E.*—Really! I didn't suppose it could be so bad as all that. Is anything being done to better conditions?

*A.*—Not much. We have some plans to widen streets, but it will cost a lot of money. Some people will be benefited a whole lot, and other people will be damaged. There may be a lot of politics in it. The real estate people are going ahead with their subdivisions in the suburbs in the same old way. There is no plan for the extension of highways, and I suppose conditions in the suburbs will be bad some day. We will let the future residents worry about that—we have enough troubles of our own. I have a house in one of the suburbs, but a man built a gasoline station on the next lot and my tenant has moved out.

*E.*—I thought most American cities had zoning laws.

*A.*—We have, but sometimes they are poorly administered. I understand things are tied up in our city by some court decision also. Anyway, zoning is an arbitrary power, and gives the members of the zoning commission too much of a chance to play favorites. They have their friends. Altogether, things seem to have gotten into quite a mess. Running city affairs in these modern times is a complicated business, and our authorities seem to be up against a bigger proposition than they can handle. Many of our regulations are out of date, and that makes enforcement lax. The whole works needs revision.

*E.*—I beg your pardon for suggesting, but why not handle the affair as you handle your big business, or your football or baseball teams? Managing your city must be as big an undertaking as managing any of your big businesses, and apparently directing the training of a football or baseball team is, relatively, a simple business, but you do not hesitate to spend money on them.

*A.*—I believe the real stumbling blocks are that we don't want some highbrows telling us how to run our affairs and that where they do have experts they don't team up well with the city authorities. We cannot get anywhere without team-work, any more than a football team can win without it.

*E.*—Do any of your American cities have that team-work?

*A.*—Some of the cities have managers. It is too big and complicated a job in a large city for one man to handle, unless he be given a free rein with authority to hire expert assistants; no man can know everything and supervise everything in a modern city. A good many of our smaller cities and a few of the big ones are getting efficient government under this plan. And in various cities other kinds of team-work are being tried out. I understand that Washington has a Park and Planning Commission to develop plans for the National Capital, both within the District of Columbia and for the suburbs in Maryland and Virginia. That Commission is the final authority on the highway plan within the District of Columbia, and has charge of the expenditure of funds for the acquisition of parks, parkways, and playgrounds.

*E.*—Do the city authorities cooperate there?

*A.*—I understand that the city authorities that have most to do with the expenditure of funds and making the zoning and public utilities regulations are members of the Park and Planning Commission. That gives them an opportunity to have a say in making the plans and act as a balance-wheel to keep the plans on a sound basis. I believe they are required to carry on all work in accordance with the approved plans. The Planning Commission is a permanent body, and can modify its plans if it be found advisable to do so.

Our cities are growing rapidly, conditions are changing, and any plans gotten up this year would probably need to be changed in some details before long.

*E.*—That sounds like a jolly interesting experiment, almost the same system you Americans use in managing your big business and your football and baseball teams. I would like to hear some more about it.

*A.*—I don't know much more about it. Well, this next stop is my city, and I shall have to get ready to get off. Mighty glad to have had a chance to talk with you.

*E.*—Quite delighted to have met you, old chap, and you have been awfully good to answer all my questions. I have learned a jolly lot of interesting things from you.

*A.*—Well, so long. Glad to have been of service. Maybe I have learned a few things myself.

METROPOLITAN TOWN PLANNING COMMISSION

Town Hall, Melbourne, Australia.
October 20, 1927

The Editor,
The American City Magazine,
443 Fourth Avenue, New York, U. S. A.

DEAR SIR:

It gives me pleasure to write and tell you that my Commission has been subscribing to your monthly magazine for several years and that it has been found to be of splendid service. In fact, I assure you that there is no other periodical to which we subscribe, that is so eagerly awaited or so closely read. It has been my pleasure to advise other organizations and citizens to subscribe to The American City because it contains a superb comprehensive monthly review of civic development all over the world, and is contributed to by expert authorities.

Yours faithfully,

A. N. KEMSLEY, Secretary.

# How Remaining Waterfronts Might Be Saved for the People

*By* TAM DEERING

EXECUTIVE SECRETARY, COMMUNITY SERVICE, SAN DIEGO, CALIF.

CITIES in Southern California will have to spend millions of dollars to purchase "peep-holes" through which the people may look out on the unfamiliar ocean surf. The waterfront is easy to exploit—quick to disappear; and, now, all along the California coast, people are held back by signs put up by private owners: "Picnicking on Beach, Fifty Cents." There is confusion in peoples' minds about this matter of beach ownership. It is well recognized that private holders may own land running down to the ordinary tide line, which is halfway between high and low tide. But it is not generally known that private owners may, by virtue of their ownership, completely shut out all others from the use of the beaches.

Los Angeles has spent millions of dollars to induce people to come to that city and county. People come in great numbers, only to find the city lacking in access to the beaches—one of the things they wanted most. Exclusive beach clubs and private owners monopolize mile after mile of the best ocean frontage nearest the city. The recovery of the waterfront for the use of the people has become almost hopeless there. Had they years ago, in advance of recent population growth, done what San Diego County has done they might have preserved their beaches without the expenditure of a penny and to the financial benefit of private owners. Los Angeles, however, having at last awakened to the situation, is taking vigorous steps to recover her county waterfront. Recently a $4,000,000 bond issue for the purchase of county beaches was nearly carried, and a new bond issue is soon to be submitted.

### Spreading Waterfront Values Over an Entire Community

During our "Save the Beaches" campaign, the Community Service maintained in the face of stubborn opposition that the suggested measure would spread the values adhering to the ocean frontage over all lots in subdivisions, including those at considerable distance from the ocean, making all lots waterfront property. We pointed out the enormous increase in valuation of property in the vicinity of lakes and rivers where the waterfront is dedicated to the public and where there is comprehensive treatment of the land on a regional plan basis, as proved from the experiences of hundreds of cities. Instances cited included the Charles River Bank, Boston; the waterfront roadway along the Hudson in New York; the Lake Shore Drive in Chicago; the miles of lakeside drives in Seattle and Minneapolis; and the European countries in which public control has been kept of waterfronts which have been made the chief attraction and center of life of the people.

We pointed out local instances of increased values where the water frontage adjoined a roadway and was given a setback and a front-door outlook on the ocean, as at Coronado. We maintained that piecemeal application of a discretionary ordinance would be inadequate, insufficient, and impossible, whereas the county regulation would add untold wealth, and would inevitably enrich every property owner of the county.

At the conclusion of our final presentation, on March 28, 1927, the throng of earnest and determined people who filled the Council Chamber to overflowing, burst into a prolonged demonstration, and many asked to be heard. At this point the leading attorney for the opposition waived all objections and offered to sign the report we had prepared. The county legal advisor assented, and the report and recommendations were made unanimous. The San Diego County beaches could not have been saved without a campaign of public education and the careful development of public opinion. Newspapers gave vital assistance, and the strong support of local organizations was backed up by the cooperation of a whole group of national associations.

### Procedure Suggested

During the time we were working for the present ordinance we met with our local representatives in the Legislature, with the result that a bill for state-wide coastline protection was passed at the last session of the Assembly and lost in the Senate by the narrow margin of one vote. However, we confidently expect that it will be adopted during the next year, and that thereby a first step will be taken toward saving the beaches of all California for the people. We should like to see this movement include the whole Pacific Coast. Mexico has, for military and commercial reasons, pre-

TENT CITY, ON THE SILVER STRAND AT CORONADO, SAN DIEGO COUNTY, WHERE A PUBLIC ROAD RUNS ALONG THE WATERFRONT WITH THE LAND BETWEEN DEDICATED AS A PUBLIC BEACH

THIS BOULEVARD TRAVERSES THE ENTIRE LENGTH OF THE OCEAN FRONTAGE OF CORONADO, CONSTITUTING ONE OF THE MOST ATTRACTIVE FEATURES OF THE SECTION

served a maritime strip above high-water line along her entire coast. San Diego County, adjoining, has acted to ensure, for a distance of seventy miles, the southernmost portion of a scenic boulevard for the Pacific Coast states. Long Beach recently voted $2,000,000 to buy back a half-block, and public officials there will act to regain the entire water frontage as rapidly as funds permit. San Francisco has entire possession of her waterfront, and small sections have been preserved up and down between. Oregon has some ocean frontage and Washington some. The frontage preserved, however, is insignificant compared with the broad, comprehensive planning for the length of the coast from Mexico to British Columbia that should be undertaken. Meanwhile, there are definite steps which may be taken immediately wherever there is a waterfront. May we suggest:

1. That all new subdivisions be required to dedicate a roadway paralleling the ordinary high tide line, dedicating all land between roadway and tide line to the public as a park; and that a right-of-way be procured by gift or otherwise on land not likely to be subdivided?

2. That land lying between existing waterfront roadways and the ordinary high tide line be procured for public park purposes to prevent objectionable development and private monopoly of access to the water?

3. That legislation be adopted permitting zoning, or control of development on the inland side of waterfront roadways, as well as on the outer side, to prevent "hot dog" stands and other objectionable features?

4. That similar treatment be adopted for the waterways along rivers, lakes, and bays?

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EDITORIAL NOTE.—An account of the San Diego "Save the Beaches" campaign appeared in THE AMERICAN CITY, July 1927, page 73. The ordinance referred to reads as follows:

"Whenever any such tract or subdivision of land is bounded on any side by an inlet, bay, or estuary, or by the Pacific Ocean, there shall be dedicated upon and by such map or plat, a roadway or street along said inlet, bay, or estuary, or ocean front, and such roadway or street shall be given a distinct name; and all such roadways or streets and those roadways or streets leading to such inlet, bay, or estuary, or ocean front, shall run and be open to the ordinary high tide line. Any land between said roadway or street and the ordinary high tide line shall also be dedicated upon and by such map or plat as and for a public park.

"This shall not apply, however, in the case of land lying between the Pacific Ocean and any inlet, bay, or estuary where the distance is less than 440 yards from the ordinary high tide line on the said inlet, bay, or estuary to the ordinary high tide line on the ocean, but in such event there shall, nevertheless, be dedicated upon and by such map or plat, roadways or streets leading to the ordinary high tide land of such inlet, bay, or estuary and ocean front at intervals of not more than 600 feet, such roadways or streets to be not less than 60 feet in width."

*Photograph by Ewing Galloway, N. Y.*

**CAN YOU COUNT THEM?**

**Ocean Beach, just south of Golden Gate, San Francisco, is a popular place for enjoying sea breezes and sunshine, practically all of the year, and the collection of motor cars to be seen on a Sunday is too great to count.**

# Five Years' Operation of a Rapid Sand Filtration Plant—II

*By* MELVILLE C. WHIPPLE

ASSISTANT PROFESSOR OF SANITARY CHEMISTRY, HARVARD ENGINEERING SCHOOL, AND SUPERVISING CHEMIST, CAMBRIDGE WATER BOARD

AND

HAROLD C. CHANDLER

FORMER CHEMIST, WATER PURIFICATION WORKS, CAMBRIDGE, MASS.

### Corrective Treatment of Corrosive Properties

The coagulation of soft waters with aluminium sulphate is bound to increase their ability to attack metals, unless the tendency is combated by supplementary treatment. There are too many cases on record to require an elaboration of this statement.

It is a sign of the times, and of the rising standards of quality that *preventable* corrosion must not be the sin of a public water-supply. In the present state of knowledge there exists no feasible method of eliminating *all* corrosion from water systems using soft water.

We in Cambridge have had to face the preconceived belief held by some that rapid sand filtration would by its very nature add greatly to any corrosion troubles experienced with the old raw-water supply. The policy followed to date has been to furnish water as nearly like the untreated supply as possible in mineral constituents, and no worse in its tendency to dissolve metals. How far beyond this point the future may carry us cannot be said. To effect further improvement will entail either (1) adding appreciably to the cost of treatment, or (2) increasing the hardness of the water.

Six months' operation of the new plant showed conclusively that without corrective treatment of some kind Cambridge would realize the predictions of the skeptics and become a "red water" town. Also, it was evident that the lower carbonate and higher sulphate content of the water was displacing the former soft carbonate scale in steam boilers with a hard, compact, crystalline sulphate scale.

The remedy that seemed most advantageous was to use soda ash. Solution tanks and feeding devices already were in place for adding this to the raw water in emergencies. Additions were made to the piping so that soda ash could be added to the aerated effluent. Treatment has been continuous since November, 1923. A dosage of 50 to 150 pounds per million gallons, giving an added alkalinity of 6 to 18 p.p.m., has been employed when alum alone was used, and from 35 to 65 pounds per million gallons, giving 4 to 8 p.p.m. of alkalinity with present treatment using both alum and sodium aluminate. Thereby, the hardness has not been increased, and noncarbonate, or incrusting hardness, has been reduced by the same amount that the alkalinity has been raised. Hydrogen ion values of the final effluent last year averaged pH 6.95.

*Lime versus Soda.*—The question is naturally often asked, "Why is lime not used? It is cheaper." There are three reasons. First, mixing and feeding devices for soda ash were available; from the standpoint of operation it was expedient to use them. Second, the use of lime would not reduce the incrusting solids of the filtered water; there was evidence that boiler trouble had increased after purification began. Third, Cambridge water, measured by the quality of many nearby communities, is moderately hard. Application of lime for corrective treatment would add approximately 40 per cent to the existing hardness, which is 28 parts per million.

*Behavior of Old Pipes.*—When clean water is turned into old pipes that are lined with deposits and tubercles, it frequently happens that there is disintegration of these and a resulting epidemic of red water for a considerable time. No such experience was encountered, but observations point to a gradual loosening of old deposits that have tended to migrate to distant parts of the city and into dead ends. Many of the larger mains were cleaned prior to the beginning of filtration.

### Algae Trouble

Reference has been made to the fact that the storage reservoirs on the Stony Brook catchment area have not been productive of large growths of microscopic organisms, particularly of those genera causing bad odors and tastes. Extracted vegetation has been responsible for decided vegetable and musty odors and tastes on one or two occasions following the melting of snow and a heavy run-off.

The Fresh Pond reservoir has always been famous for the wealth of its microscopic life. Production has not increased since it became a reserve source of supply; it has decreased somewhat, but heavy growths have developed occasionally in the last four years. Blue-green algae and diatoms have then flourished to the extent of several thousand standard units per cubic centimeter.

The diatoms impart vegetable and aromatic odors, sometimes distinct, more often faint. They do not appreciably reduce the length of filter service; many of them are precipitated in the coagulation basin. The blue-green varieties are the worst offenders, giving the water a musty or grassy odor, refusing to settle appreciably, and by virtue of their gelatinous properties clogging the sand and reducing filter runs. Their occurrence coincides with the heavy consumption periods of late summer and fall. It has been necessary to resort to treatment of Fresh Pond with copper sulphate. This has been done from one to three times each season, microscopical analyses being used to indicate the necessity.

*Treatment of Fresh Pond.*—The area of the pond is 160 acres, of which 37 acres are in a bay on the east side. The intake is in the bay at a depth of 10 feet. Treatment usually is confined to this bay, but it is occasionally extended to another smaller bay around a point of land, into which the inlet discharges. A dose of 400 pounds of copper sulphate is applied to the larger bay by suspending bags over the gunwales of a rowboat. An outboard motor supplies power, and lanes are covered about 25 feet apart. Two men are required for one day to carry out this program.

The dosage of copper sulphate is 0.25 p.p.m., or 2 pounds per million gallons, based upon the entire depth of water. During the period of summer stagnation there is little microscopic life below a depth of 10 or 15 feet. The effect of the copper sulphate is carried beyond this depth very slowly. If the dosage is calculated on a basis of 10 feet of depth, it becomes 0.58 p.p.m., or 4.8 pounds per million gallons. It is within this zone that most of the organisms are found. No fish have been killed by the treatment.

A reduction in the bulk of the growth is spread over several days, during which the miscroscope reveals many cells that have lost much of their coloring matter and life substance. The destruc-

tion of blue-green algae is often followed by the multiplication of diatoms and nearly always by an increase in bacteria.

Following the application of algicide and the disappearance of blue-green organisms, there is a longer period of service for the filters. The increase is not great but is noticeable, being from two to three hours. It brings relief to the plant when it is most needed.

### Results of Purification

The preceding discussion has been confined to methods of operation and to the problems attendant upon operation. This leaves two subjects for consideration that measure the success of the purification processes employed—first, the character of the water turned out, second, the cost of its production.

*Physical and Chemical Qualities.*—The average turbidity of the raw water last year was 2 p.p.m. and the average color 42 p.p.m., the maximum monthly averages being 4 and 52 respectively. Coagulation and sedimentation resulted in the settled water having an average turbidity of 3 p.p.m., slightly higher than the raw water, and an average color of 31 p.p.m. These figures fairly represent the performance of the coagulation basin, which allows a detention of only 2.5 hours.

The final effluent had an average turbidity of 0 and an average color of 4. The maximum effluent color was 10, the minimum 0.

The average alkalinity of the raw water was 14 p.p.m., the maximum monthly being 17.5 and the minimum 10.5. These are the lowest values of any of the four years. Coagulation reduced the alkalinity to an average value of 8 p.p.m., and this was corrected after filtration by addition of soda ash, so that the final effluent carried an alkalinity of 16.5 p.p.m., an average of 2.5 parts more than the raw water.

Carbon dioxide averaged 4 p.p.m. in the raw water, 11.5 parts in the coagulated, and 3.5 parts in the final effluent.

The pH value of the raw water averaged 6.8, with a monthly maximum of 7.1 and a minimum of 6.5. That of the coagulated water averaged 6.2, and of the final effluent after addition of soda ash, 6.95.

*Bacteriological Qualities.*—The bacterial content of the raw water for the last year of operation, 1926-27, was somewhat lower than that of other years. The average number of bacteria in the raw water developing at 20° was 240 per cubic centimeter, the monthly maximum being 450 and the minimum 140 per cubic centimeter. The highest monthly average ever recorded was that of February, 1925, which was 3,700 per cubic centimeter.

The coagulated water in 1926-27 contained an average of 160 20° bacteria, 65 per cent of the number in the raw water, and the filtered water contained an average of 150 per cubic centimeter. The final effluent had an average of 2 per cubic centimeter.

The 37° bacteria for the raw, coagulated, filtered and effluent waters averaged for the year 90, 37, 6 and 1 per cubic centimeter respectively, showing a more consistent and uniform removal for different stages of purification than did the 20° bacteria.

The Bact. coli index per 100 cubic centimeters of sample averaged for the raw, coagulated, filtered, and effluent samples 10, 0.6, 0.1, and 0.

*Aluminium Content.*—There is another constitutent of alum-treated waters that measures the efficiency of coagulation and filtration; that is the aluminium content. Numerous tests made upon the filtered water have shown values for aluminium ranging from 0.02 p.p.m., the slightest trace, to 0.5 p.p.m. The great majority of tests have shown less than 0.2 p.p.m. The largest amounts are found in the cold months, when coagulation and sedimentation are poor and when the filters have a tendency to break at losses of head of about 6 feet. At such times, also, the coagulated water is most acid and shows lowest pH values. Exactly opposite conditions prevail in the summer, when the smallest amounts of aluminum have been recorded.

*Summary of Results of Purification.*—Rapid sand filtration at Cambridge has dealt with a raw water stained with the extract of dead vegetation, dull in appearance, impregnated with odors and tastes from dead and living plants, at times distinctly corrosive toward metals, and always liable to adventitious entrance of the germs of water-borne diseases. The result of purification has been the production of a drinking water that is nearly colorless, brilliant in appearance and usually free from noticeable tastes and odors, without hardness in excess of that of the raw supply, with corrosive tendencies reduced rather than intensified, and with a bacterial content that rivals the purest natural waters and precludes the possibility of water-borne diseases entering the community through the medium of the water-supply.

### Costs of Purification

During the year ending March 31, 1927, there were filtered an average of 13.47 million gallons daily, of which 12.79 million gallons daily were sent to the city. The average yield of the plant was at the rate of 122 million gallons per acre per day, and the average rate of filtration was 131 million gallons per acre per day.

The wash water pumped was 660,000 gallons per day, of which 170,000 gallons remained on the beds after washing, leaving 490,000 gallons wasted to the sewer. The wash water wasted was therefore 3.6 per cent of the total filtered. The average period of filter service was 12.2 hours, the maximum monthly average being 18.7 hours and the minimum 6.6 hours. Losses of head ranged, as an average, from 0.9 foot initial to 8.5 feet final. Nine feet is a maximum beyond which normal rates of filtration cannot be maintained.

Cost figures for purification appear in the table below. They cover the three years 1925, 1926 and 1927, ending March 31. Total costs and costs per million gallons *filtered* are given, and these are divided into five items—(1) Chemicals, (2) Labor, (3) Laboratory, (4) Power and Fuel, (5) Equipment, Service and Supplies.

OPERATING COST DATA—CAMBRIDGE WATER PURIFICATION WORKS

| | Total Cost, Year Ending March 31 | | | Cost per M.G. Filtered, Year Ending March 31 | | |
|---|---|---|---|---|---|---|
| | 1925 | 1926 | 1927 | 1925 | 1926 | 1927 |
| Chemicals | $21,345.00 | $24,530.00 | $24,563.00 | $ 4.53 | $ 5.32 | $ 5.05 |
| Labor, operators, etc. | 17,654.00 | 18,798.00 | 19,864.00 | 3.75 | 4.07 | 4.08 |
| Laboratory, chemists, supplies, gas | 3,555.24 | 3,904.83 | 3,798.63 | 0.76 | .85 | .78 |
| Power, lights and fuel | 8,621.98 | 5,396.02 | 5,838.27 | 1.41 | 1.17 | 1.20 |
| Equipment, service and supplies | 1,352.92 | 1,147.26 | 1,351.48 | .29 | .25 | .28 |
| Totals | $50,529.14 | $53,776.11 | $55,415.38 | $10.74 | $11.66 | $11.39 |
| Million gallons filtered | 4,707 | 4,614 | 4,865 | ..... | ..... | ..... |

The total costs for the past three years have been $50,529, $53,776, and $55,415. The water filtered has been 4,707, 4,614, and 4,865 million gallons, thus giving costs per million gallons of $10.74, $11.66, and $11.39. These figures do not include any portion of the fixed charges for construction.

ACKNOWLEDGMENT.—From a paper read before New England Water Works Association at Boston.

## The Cost of Fine Crushed Rock and Gravel Roads

THE fine crushed material generally ranges in cost from $2 to $3 a cubic yard, measured in trucks at the point of delivery, but may be as low as $1.20 and more than $5, depending upon relative availability and length of haul. The quantity used ranges from 1,200 to 2,500 cubic yards per mile; and the normal cost is, perhaps, $4,000 to $6,000 per mile for 18-foot width. Compared with gravel roads of the older type, these surfaces are little if any more expensive and their riding qualities are often much superior. They cost less than water-bound macadam and are more readily maintained.

# Control of Street Pavement Openings

*Methods of Control in Representative American Cities—II*

### New York City

In the borough of Manhattan, New York, with 480 miles of paved street, about 27,000 permits for street openings are issued each year, and about 180,000 square yards of pavement are cut and restored each year. With the great density of traffic in the borough, an open or unpaved cut is a serious obstacle to traffic, and the aim of the administration and the highway maintenance forces is to restore the pavement at the earliest possible time after work in the opening has been completed, including the backfilling.

Before an opening can be made, a permit must be obtained. The application is accompanied by a deposit of cash or certified check sufficient to cover the cost for the restoration and for a second restoration in case of settlement within six months of the pavement over the cut due to improper backfilling. This double deposit system is very successful in securing better compacting of the backfill.

As soon as the permit is issued, a form in triplicate is made out, one copy going to the inspector patrolling the district. He follows up the work, and when the trench has been refilled, sends in a report with a sketch showing the size of the opening and its location. A work order is made out, going either to a city gang if the pavement is out of guarantee, or to the guaranteeing contractor.

The foregoing procedure for the restoration of pavement does not hold true where public service corporations are involved, because of the special terms of their respective charters. A five days' notice (20 days in case of railroad companies) must be given before the city can do the work with its own forces, which allows some time for settlement of the filling, but otherwise no postponement of pavement restoration is allowed to permit of the consolidation of the backfilling.

As soon as possible after the expiration of the notice, the concrete is laid and covered with excavated material from the trench, to a depth of three inches, if in asphalt pavement, and six inches if in granite pavement. Under this treatment, it is found that, except in very rare cases, the concrete has set up well and firm when the top gang cleans off the dirt. The result is that the great majority of pavement openings are restored within ten days after the backfilling has been completed. Even with this prompt restoration and the necessarily short time given for the setting of the concrete foundation, only a small proportion of the cuts require to be repaved a second time wthin the six months' period.

*—This statement is based on information furnished by C. M. Pinckney, Chief Engineer, Borough of Manhattan, New York.*

### Detroit, Mich.

A high charge is made by the city of Detroit with no refund, as a prevention against pavement opening. The charge for cutting of the first-year pavement is $75, with no refund, and the charge for cutting a second-year pavement is $50, without a refund. After the second year, a deposit is required, varying with the character of work, upon which a refund is made after the cost of the work is determined and completed by the Department of Public Works.

The practice of issuing permits to plumbers has been discontinued, as all this connection work is done either by the Department of Water Supply or the Detroit City Gas Co. The Department of Water Supply, the Gas Co., and the Edison Co. replace all their own trenches and construct the concrete base at their own expense, leaving the asphalt top to be placed by the Department of Public Works, and to be billed to them later. The Telephone Co., Postal and Western Union Telegraph Cos., Detroit Fire Department and the Public Lighting Commission go no further than to backfill and to tamp the trench, leaving the concrete base and asphalt top to the Department of Public Works to complete, the cost being billed as mentioned.

All cuts are backfilled and repaired under city inspection. Inspectors are paid at the rate of $7.28 per day and are employed on a monthly basis, except for a lay-off of two or three months in the winter. The money derived from the issuing of permits is credited to the permit fund, a revolving fund within the Department, which is used for the repair of cuts and kindred work, and the compensation of inspection and clerical personnel.

*—This statement is based on information furnished by Perry A. Fellows, City Engineer, Department of Public Works, Detroit, Mich.*

### The Double-Deposit System

**The double-deposit system used in one city requires that a deposit be made where a second restoration is necessary in case of settlement within 6 months. This has done a great deal toward better compacting of the backfill and better and more permanent jobs. High charges for cutting and no refund are a means of reducing the cutting in another case. The first portion of this article appearing in the January issue of THE AMERICAN CITY contains reports from Indianapolis, San Antonio, Atlanta, Syracuse, Boston, Portland, Ore., Miami, Columbus, Ohio, and Los Angeles, Calif.**

### Cincinnati, Ohio

The city of Cincinnati has had a system for nearly twenty years by which the city issues permits to make cuts in the pavement on a deposit by the permittee; the restoration of the pavement being done subsequently by city forces. The old ordinance or rules adopted for this work many years ago have become more or less antiquated, and the city is now working on the installation of what is hoped will be a better system, but the details have not been worked out completely as yet. However, under the new rules and regulations, an additional charge is made for opening a pavement less than three years old. This additional charge is on a sliding scale and must equal two per cent per month for the number of months to elapse to the end of the three-year restricted period. In the case of longitudinal trenches of great length, or other cases where the restoration work is of great magnitude, the Engineer of Highways may, with the consent and approval of the City Manager, perform the street restoration work at a special price, based on the actual cost of labor and material used in the restoration, plus 25 per cent for the use of tools and equipment, superintendence and overhead and subsequent maintenance.

*—This statement is based on information furnished by H. F. Shipley, Engineer of Highways, Department of Highways, Cincinnati, Ohio.*

### Birmingham, Ala.

Upon written application, a corporation is issued a permit in triplicate, in Birmingham. The kind of pavement to be cut, the location, etc., are plainly marked on this form. The city reserves the right to replace the pavement, thus assuring the city that the replacement will be made with the same kind of material as the original. The city maintains a force of men for this purpose, and the holder of the permit is responsible to the city for the cost of repairs and replacement.

In the case of issuing of permits for sewer and water connections where the plumber is involved, the method is the same, except that the plumber is under a $2,500 bond, and the cost is charged to his account in the City Controller's office, where a deposit is kept for that purpose by the plumber. A fee of $1 is charged for all excavation permits.

*—This statement is based on information furnished by David Stanton, Superintendent of Plumbing and Excavation Departments, Birmingham, Ala.*

### Seattle, Wash.

By charging the cost of backfilling and paving restoration to the party or concern making the original cut, the city of

Seattle feels that it has found a successful method of preventing undue pavement openings and of insurance of proper reconstruction and settlement.

The Department of Streets and Sewers has jurisdiction by charter over the maintenance of all streets and sewers; this maintenance includes the opening and closing of utility cuts, etc., within street area. The city, by ordinance, has legislated that utility cuts including openings made for steam lines, conduits of all kinds, gas-mains, water-mains, side sewer connections, water service connections, and any openings whatsoever, can be made by contractors and other properly authorized persons, but the backfilling of all trenches and tunnels thus excavated shall be performed by the Department of Streets and Sewers and the paving restored by that Department, the cost of such backfilling and paving restoration being charged to the party or concern making the original cut.

**Five Years Without Cuts**

**Atlanta, Ga., has experimented with several methods of controlling pavement cuts. For several years it has been operating under a city ordinance which forbids the opening of streets paved with "permanent pavements" within five years after completion of the work. As this is a growing city, it was found impractical to enforce the ordinance owing to the method adopted at the time of notifying the property owners on the streets to have their underground connections all made before the street was paved. Later, the city undertook to make all sewer and water connections and assessed this cost against the property before the street was paved. This was a great improvement, but did not operate successfully in regard to gas connections. This caused the amendment of the ordinance allowing openings to be made after approval by the street committee of the council and the chief of construction upon payment of a penalty of $25, which does not include any of the cost incident to the work, but the penalty only.**

It is the endeavor of the Department to bill the cost of the work at practically the cost to the Department. In some cases, a flat rate for a certain size opening is charged and, in other cases, the work is performed on a cost-plus basis. The moneys paid to the city for work performed are diverted to a revolving fund created by ordinance, and this revolving fund permits the ready financing of all work of this character.

*—This statement is based on information furnished by W. D. Barkhuff, Superintendent, Department of Streets and Sewers, Seattle, Wash.*

**Pittsburgh, Pa.**

When a street is paved, or completely repaved, in Pittsburgh, notice is served on all abutting property holders to make all contemplated connections (water, gas, sewer, conduit for wires or heating, etc.) before the street work starts. The general rule then is to refuse a permit to open a new pavement for five years after completion, thus avoiding the breaking-down due to small cutting operations, but this rule is rarely followed in its entirety,—because of so many lines being under roadway instead of both sidewalks, in many sections.

Application for street opening permits is filed with the Utilities Division of the Bureau of Highways, a part of the Department of Public Works. The same course is followed whether the surface of the roadway is to be cut or poles or posts installed along the curb. The purpose of this latter, while not directly affecting street surfaces, is designed to control the placing of all such works (surface, underground or overhead) and protect the existing structures.

After examination by the Engineer of Utilities Division, the application, if acceptable, is subject in turn to the approval of the Superintendent of the Bureau of Highways, the Chief of the Engineering Bureau, the Head of the Water Bureau, and, finally, the Director of Public Works. A record tracing, in ink, is required, and the official signature of each officer approving is endorsed directly thereon. Blueprints, as required, are made from this official tracing. The city in its own construction of water-mains and sewers, cuts into and replaces road surfaces as may be necessary to the work, but full cuts are not always necessary. Placing of automatic traffic beacons by the Safety Department is subject to the same general rules as for private work.

After permits have been issued, and the work done (subject to inspection), the opening is required to be filled in and rammed; if on a paved street, the upper fill is required to be of large gravel packed to prevent settling. A reasonable period, depending on traffic and other street conditions, elapses before the surface paving is replaced. But where the opening is made in a paved street, a temporary hard surface of brick is put in immediately to prevent dangerous ruts while settling. The City Asphalt Plant (a division of the Highways Bureau) makes the final surface repair, after the structures covered in the permits are completed and the fill has settled enough to maintain the surface.

*—This statement is based on information furnished by Col. James I. Brennan, Managing Engineer, Pittsburgh, Pa.*

**Wichita, Kans.**

In Wichita, the responsibility of the party making the pavement cut absolutely ends with the backfilling and hauling away of surplus material. No person or firm or corporation is granted a permit to open a street or make a paving cut until they have deposited a bond with the city indemnifying it against claims for personal or property damage which may arise from accidents caused by the holes in the streets or paving.

After the permit has been issued, the person or concern makes the necessary cut in the pavement and, after completing the work in the substructure, fills the hole, placing the broken pavement in the upper part of the hole, leaving it approximately level with the surrounding pavement but without tamping or flushing in ordinary circumstances. The Director of Public Service is notified on the completion of the work up to this point, and the obligation of the person making the hole ceases with the backfilling, as described, and the hauling away of surplus material.

The forces of the Street Maintenance Department repair the pavement by cutting the concrete base or finished concrete pavement back six inches away from the edge of the excavated earth underneath on all sides and making the base or pavement not less than eight inches thick, finishing the surface with the same kind of pavement as was originally constructed. The street foreman making the repair measures the cut, after being so trimmed, and returns his construction slip to the office with the measurements noted thereon. The party responsible for the cut is then billed with the difference between the cash deposit made when the permit is taken out and the actual cost, at the specified rate, according to the final dimensions of the opening.

The obligation of the party making the cut absolutely terminates when the original backfill is made. The obligation is carried by the city if, for any reason, the backfill dirt settles and an accident occurs after the work is turned back to the Street Department. This sometimes happens after a severe rainstorm, in a freshly filled opening. The city also replaces and maintains pavement in those cases where it settles after being once repaired. This sometimes happens because of careless or faulty replacement of pavement by the street foreman in the original instance.

*—This statement is based on information furnished by P. L. Brockway, City Engineer, Wichita, Kans.*

**Jacksonville, Fla.**

It is felt by the city of Jacksonville that it is impossible to stop public service corporations and plumbers from making cuts in paved streets without retarding the development and progress of a growing city, but this city has endeavored to eliminate this situation as much as possible by requiring public service corporations and city departments to install connections from their mains for all vacant property and property not having connections, previous to the construction of a substantial type of pavement. This practice has reduced cuts in the more substantial types of pavement

to a minimum, but it is impossible to predetermine the class of building that may be constructed on the property, and in many cases especially large connections are required when the property is improved which will necessitate the cutting of the street. But by requiring this of the public service corporations, the Water Department and the Sewer Department of the city, and by having an ordinance on the city books prohibiting the cutting of any pavement for five years after it has been laid, unless there is a real emergency condition, the cuts have been reduced somewhat.

City engineers and city officials can only hope to reduce this as much as possible by endeavoring to have the users of the street look ahead as far as possible previous to the paving, and the handling of such conditions through the practice of requiring them to pay for permanent repairs makes it more expensive for them to do this work, and they will not do so unless as a last resort.

When pavement cuts are made, public service corporations and city departments are required to make temporary repairs to the pavement, and the Engineering Department endeavors to check them up and see whether the cuts and trenches have been properly compacted when backfilled. This is one of the problems that has never been satisfactorily solved in this city, as it is almost impossible to get public service corporations to compact properly trenches and cuts in the subgrade of paved streets. After these cuts have been allowed to settle a short while, the temporary repairs are removed and permanent repairs made by city forces, and the cost of such repairs is charged against the party making the cut.

*—This statement is based on information furnished by W. E. Sheddan, City Engineer, Jacksonville, Fla.*

### St. Louis, Mo.

Conferences have been held with the Master Plumbers Association and all public utility companies in St. Louis, with a view to bettering conditions of pavement openings. The main topic of discussion has been to attempt to have all repairs made to underground piping and conduits previous to reconstruction of street pavements, under penalty of not allowing cuts in the street for at least a year after laying new pavement.

Before allowing an excavation in the street, the applicant for a permit must make a deposit of $100 for each 75 feet of trench to be opened, and if the applicant does not make the repairs, the city makes them and charges this against the deposit, and no further permits are allowed until the fund is brought up to the original amount. When the backfill is tamped up to the subgrade, temporary pavement is then placed in the excavation. This usually consists of four inches of sand; then brick is laid on edge on this sand. Excavation up to this point is still maintained by the party that made the opening. The period for this maintenance is decided by the Street Commissioner, but it is not to exceed one year. If depressions occur, as they do, the party making the excavation is notified to make immediate repairs.

The Street Department allows all public utility companies to make their own permanent pavement, with the exception of asphalt pavements, which are repaired by the Street Department and charged to the applicant. Depressions in the streets, in the majority of cases, are caused by temporarily paved excavations. These are, as a rule, for about four months in this temporary condition.

*—This statement is based on information furnished by Robert B. Brooks, Director of Streets and Sewers, St. Louis, Mo.*

### Denver, Colo.

Pavement cutting openings are done under the inspection of the Engineering Department, in Denver. When the party obtaining a permit has completed the connection and the ditch is ready for backfilling, notice must be given the Engineering Department, and then an inspector is sent to the job to see that the backfilling is properly done. The party making the opening is then required to plank it.

The Paving Division, after a lapse of not less than ten days, issues a work order, which is given to the foreman, who, with his crew, removes the plank, excavates to the proper depth, and tamps well, and the base for the pavement is then put in. The planking is then replaced and usually ten days elapse before putting on the wearing surface.

Openings made by public utility corporations on paved streets or alleys are generally by air cutting tools. Plumbers and drain layers generally make cuts by hand, which this city finds is not so efficient as machine work, since less damage is done to the adjacent pavement by the use of the air cutting method.

*—This statement is based on information furnished by Albion K. Vickery, City Engineer, Denver, Colo.*

### Knoxville, Tenn.

Before the opening of a street or sidewalk in Knoxville, the party making the cut must obtain a permit from the City Engineer's office, showing the size of the cut, the time when work will start, and the approximate time when the work will be completed. Each permit is numbered and specifies the street, house number, and between what street intersections the cut is to be made. Before any permit is given, the party must have a bond on file with the city to protect the city from any damages that might happen.

The city expects the party obtaining the permit to replace the street in the same condition as found before the cut was made, and if the cut is not fixed within ten days after the completion of the work, the city has its maintenance crew repair the cut, charging the party for it. If the city does the patching, this does not relieve the party of the responsibility. If there is any settlement in the cut, the party is notified that the patch has settled and requested to make the necessary repairs. If this is not done, the city repairs the cut again, billing the party making the cut, at the rate per square yard for different types of pavement. The sidewalk inspector checks up on the cuts to see that they are replaced in the same condition as found, turning in a report to the City Engineer.

*—This statement is based on information furnished by W. W. Mynatt, City Engineer, Department of Public Service, Knoxville, Tenn.*

### San Francisco, Calif.

In San Francisco, any person, firm or corporation intending to make excavations in public streets, alleys or other public places must make and maintain with the Board of Public Works a general deposit in the sum of $2,500, or file a bond for this amount; this general deposit shall be used for the cost of repairs and restorations. In case any excavation made in accordance with any certificate shall not be refilled and the pavement restored within the time stated therein, or within the time as extended as permitted, then the sum of $5 for each day such work is thereafter uncompleted shall be deducted from the deposit made. Wherever any caving occurs in the side walls of any excavation, the pavement above such caving shall be cut away, and in no case shall any void under a pavement be filled by any side or lateral tamping.

When the party making the opening fails to make the proper restoration within the proper time, the Board of Public Works shall do the work at the expense of the delinquent person, firm or corporation.

*—This statement is based on information furnished by M. M. O'Shaughnessy, City Engineer, Department of Public Works, San Francisco, Calif.*

## Poor Roads Are Expensive

AN automotive engineer found that in one year the automobile consumption of gasoline in North Carolina was reduced by improved roads from 521 to 454 gallons, according to *California Highways*. That made a saving of $16.76 per car.

Fuel, however, is only one of the various factors involved. The poor road wears out the whole car faster than the good road. The expense thus caused is far higher than most owners suspect.

An automobile dealer in Illinois who carefully checked up the expense of operating on paved roads and on dirt roads, found that the motorists saved, on an average, 2.4 cents a mile on the hard-surfaced highways. Another investigator put the saving a little higher. The average may be 2.5 cents a mile. Motor trucks may save as much as 5 cents a mile on good paved roads as against unimproved.

# Up in the Air

## *An Examination of Certain Arguments for Skyscrapers*

*By* WAYNE D. HEYDECKER
CHAIRMAN, CITY PLANNING BOARD, MT. VERNON, N. Y.

FROM time to time there appear in the papers articles issued by real estate men, building owners, architects and others, declaring that the skyscraper is the greatest of all modern inventions, the symbol of prosperity, the acme of convenience, the antidote to traffic congestion, and, in short, the ideal form of city construction.

By nature I am a patient man and I hope a tolerant one, but my patience and tolerance are sorely tried by certain clippings which have recently come to my attention, depicting the views of individuals and committees which claim to have made a study of the effect of limiting the height of office buildings.

It happens that I know many of these men, and I should say that to all outward appearances they seem rational, but when I read the arguments attributed to them, I wonder if they are suffering from some serious mental disturbance or are simply the victims of incorrect interpretation. For example, take the claim that London, a city without a skyscraper and with its business district therefore spread out, reveals the worst traffic congestion in the world. I have spent a little time in London, and while I do not pretend to make statements so sweeping as that quoted, I should say that anyone who took one good look at London traffic could not fail to see conditions that invalidate comparison with American cities. London congestion is due almost wholly to taxicabs, and busses, of which there are hundreds, all centering in the old "city" or small central area, into which are crowded the leading stores, hotels, business houses and government offices. In New York we have achieved a substantial segregation, a separate shopping district, hotel district, financial district, and governmental center. This factor greatly relieves the pressure and distributes traffic. London is congested because of its historical evolution, not because of its low buildings. If the height limit were doubled, congestion certainly would not decrease.

The average high building enthusiast argues that it is just as foolish to limit the growth of a city upward as it would be to limit it outward, and he cites as an analogy the case of a boy who outgrows his clothes. He argues that we must provide a new set of streets, parks, transit, etc., with each period of the city's growth.

Upon examination, the analogy falls with a thud. The boy is a unit; as he grows, he must grow in all directions, arms, legs, trunk and head grow in proportion to each other. The city may grow in one direction and not in another, for there is no municipal symmetry enforced by nature. A better analogy would be the growth of a rose-bush or berry bush. Both tend to ramble out in all directions, sending out runners or shoots from which spring new stems. Only when progress is checked and growth hemmed in, do such plants struggle upward on tall stalks for light and air. A city may also be likened to a honeycomb which grows principally by horizontal accretions. It is a cellular structure of two dimensions. Even in New York, with nearly 600,000 buildings, only about 1,000 exceed ten stories. What folly, therefore, to argue that a city must be uncontrolled in three dimensions!

Again, the "skyscraperite" puts the cart before the horse somewhat ludicrously when he says, "Anything that is done to destroy the value of property in business districts is a body-blow to the commerce of the nation." Obviously, no height limitation lower than that of any existing buildings will destroy their value. Rather, by giving them a vested monoply of height it should increase their value if there is any truth in the skyscraperite's thesis. Therefore he must refer to the value of the land on which others hope to erect tall buildings.

### Who Benefits by High Land Values?

High land values on which business must pay rent or carrying charges are obviously a drag on business, for these charges must be paid before profits can be taken. If the same volume of business can be done with a lower overhead for site charges, business will benefit by the saving. Our friends have committed the comical error of assuming that the owners of land in business districts contribute to the business of the nation, when any one not wholly blind knows that landowners as such are leeches on the body of commerce, sucking the blood of business by high rents. Values in business districts are merely the reflections of increased power of production or increased ease of selling due to the site of the business. Rising land values in business districts exact ever higher tributes from business as the price of remaining in a convenient place. They are a result, not a cause, of business prosperity.

The cause of traffic congestion, argues the skyscraperite, is not the concentration of business in small areas by means of skyscrapers, but the fact that city officials have been so careless as not to widen streets as fast as business demands, and apparently regardless of cost. His Unlimited Highness has apparently failed to see that where business concentrates, there too will traffic concentrate; and that where business is segregated into minor centers of not too great concentration, there traffic tends to spread out. To argue that streets must be widened regardless of financial or social cost wherever landowners happen to want to erect skyscrapers, is to argue that the city is helpless, that it must accept any and all means of transport which science may develop vertically or horizontally, regardless of social or economic consequences.

At this point it might be well to add that I am not opposed to skyscrapers as such, but I am opposed to them where they overload the land and overshadow their neighbors. If John Smith wants to put up a building so tall that it will barely pay, let him go to it, provided he will at his own expense provide enough area around it to take care of the traffic load and to protect his neighbors against loss of light and air. Then if he wants to waste his funds on an uneconomic structure, that is his right.

One modest advocate claims that the skyscraper is "the most efficient building known to man." It may be in the sense that it fills the many needs of its occupants, but as an economic unit it fails to qualify, for its percentage of net return on the investment is very much lower in most cases than that of lower buildings which are not burdened with such tremendous overhead in operating and maintenance costs. So notorious is this fact that one shrewd operator in New York who knows from bitter experience calls them "towers of deficit." Moreover, from the standpoint of social efficiency a tall building that, by its shadow and its absorption of tenants, blights the adjoining territory, can hardly qualify on the ground of efficiency.

### Who Benefits by Traffic Congestion?

The tall-building man falls into the error of thinking that all merchants still have the old idea that heavy traffic past their places of business means heavy business. He argues that they want congestion because congestion increases

land values. A litle study will convince any reasonable person that congestion caused by through traffic clogs the streets in a business center and makes it difficult for local shoppers to gain access to the stores. The tourist leaves little or no money, but the local shopper leaves much if he has a chance to get near the store. The average merchant, however, does not see it yet. He is still in the frame of mind of the man who likes to stand in the crowd even though he can't see what is going on.

That "population creates land values by enhancing the business that may be done in any one location" is true only when the would-be purchasers can reach that location in comfort and safety. The most business is not done in the stores that are hardest to reach.

Reducing the permissible height of buildings relieves traffic in so far as it reduces the bulk of the office space contributing to the street load. It is a pretty theory of the skyscraper advocates that inter-office business in tall buildings relieves street traffic more than the presence of the high buildings creates it, but like many others of their arguments it has yet to be demonstrated, and the facts seem to indicate that, except where one company occupies a tall building and where there is much interdepartmental traffic, the reverse is true. Moreover, the peak of the traffic load in office-building districts comes not during office hours but during the periods of travel between office and home.

No, my friends, we must take your views with several grains of salt. You serve a special interest that has long done its "getting" while the getting was good, but now that the public is waking up to the consequences that follow giving your friends freedom to do as they please, the going is going to be rougher for the spoilers. Sound business, sound economics and the public health and comfort all combine to demand a curtailment of the reckless disregard of the public interest, by speculators who are concerned primarily with big building operations, and who don't have to live with the economic and social monstrosities they create.

# Wild Animals Inhabit Barless Enclosures in Chicago Zoological Gardens

THE soft-hearted animal lover visiting the Chicago Zoological Gardens in order to pity the "poor caged animals" might conceive himself to be walking in the midst of a nightmare when he found himself trembling amidst a great section where bears, lions, wolves, and other formidable beasts wandered at pleasure in their native settings with no signs of a restraining bar in sight. But he would discover to his relief that though the animals may come within a few feet of him, they are effectually held back by a deep moat, or a series of moats, from their human visitors and from each other. This barless type of construction used in conjunction with naturalistic settings for the animals has been effectually applied in Hamburg and other European cities, and in one or two American cities. Its adoption in Chicago is described in the Year Book of the Chicago Zoological Society for 1927 (just issued).

The objects of this Society are "the foundation, maintenance, and control of zoological parks or gardens and other collections; the promotion of zoology and kindred subjects; the instruction and recreation of the people; the collection, holding and expenditure of funds for zoological research and publication; the protection of wild life and kindred purposes." Progress to date along all these lines of endeavor, together with some discussion of future programs, makes up the greater part of the substantially bound, attractively printed Year Book, which is well illustrated with photographs, including those from other important zoological gardens of the world in the lead of which the Chicago Society has the ambition to place its gardens.

1. Entrance
2. Administration Building
3. Comfort Station
4. Small Mammal House
5. Beavers
6. Bears
7. Raccoons
8. Prairie Dogs
9. Badgers
10. Muskrats
11. Bears in Barless Enclosures
12. Kangaroos
13. Refectory
14. Lions, Tigers, Pumas, Hyenas, in Barless Enclosures
15. Lion House
16. Foxes and Wolves
17. Goat Hill
18. Elephants and Rhinoceroses
19. Hippopotamuses
20. Zebra House
21. Vicunas, Alpacas, Llamas
22. Camels
23. Swine
24. Asiatic Deer
25. Giraffes
26. European Deer
27. Refreshments
28. Antelope House
29. American Deer
30. Small Deer
31. Director's House
32. Storage Barn
33. Boats
34. Yaks
35. Bison
36. Sea-lions
37. Herons
38. Cranes
39. Flying Cage
40. Gulls
41. Pheasants
42. Aquatic Birds
43. Parrots
44. Bird House
45. Insects
46. Duck Pond
47. Reptiles
48. Birds of Prey
49. Monkey Island
50. Primate House
51. Ostriches and Emus
52. Garage
53. Stable
54. Greenhouse
55. Power House
56. Commissary
57. Kitchen
58. Shops
59. Hospital and Receiving Room

C.S. Comfort Station

# The Anti-Pollution Campaign in Texas

*By* WILLIAM J. TUCKER

COMMISSIONER, TEXAS GAME, FISH AND OYSTER COMMISSION

WITHIN that large section of the North American Continent now known as Texas, a parcel of land lying more than 800 miles from north to south and an even greater distance from its farthermost northwestern point to its southwestern juncture with the Republic and the Gulf of Mexico, were mountains and marshes, majestic forests and the great staked plains, hill lands and rolling prairies, sweeping valleys, and table-lands. And through it all was threaded a web of little streams growing into larger streams on the long journey across Texas from the uplands to the Gulf. Rising in the northwest, the major streams flowed southeast in unbroken lines to reach the Gulf and there pour out their water, whose coolness had nurtured the buffalo, the antelope and the deer hundreds of miles away.

There was no water pollution in Texas then nor for many years to come. Great cities began to grow along the banks of rivers, and industries sprang up. Then it was that the blight of pollution began. Within the memory of the present generation there was a nearby "swimming hole" for the youth of every community, also a pool into which one could dip fish-hooks and be confident of success. But there came a time not long ago when a policy of carelessness permitted the turning of sewage and waste into rivers until all aquatic life died and a stench arose from the river banks to drive small boys on a summer's day back to the horrors of a home bathtub.

Some time ago we were brought face to face with the fact that, however successful our efforts in the protection and propagation of fish might be in certain localities, those efforts would not result in any material increase of the fish life of this state if unrestricted pollution of streams and lakes were continued. Therefore, this Department reached the decision that an adequate campaign against pollution had reached the stage of an emergency.

We are primarily interested in providing waters in which fish may thrive, but we realize that in providing waters suitable for fish, more is being accomplished in another direction. After the eradication of pollution, waters are adaptable for fish life, and then those waters are ordinarily suitable for domestic and live-stock purposes, and this is a big consideration. When pollution of streams is stopped, public health is given an additional safeguard. The general appearance of the community through which a stream passes or near which a lake is situated is greatly enhanced. Therefore, our work to provide better water for fish and to protect those waters from pollution serves a manifold purpose.

In considering the matter of pollution, one of the first questions is its source. We have found that oil from fields and refineries presents a big problem. Another problem is factory waste and refuse from packing-plants, and there is also the problem of salt water from oil fields, and municipal pollution, which is from several sources. There is also pollution that comes from ships visiting our harbors and cleaning their bilges in fish-producing waters.

### Legislation Against Pollution

**When an aroused populace demanded that something be done to protect and restore the purity of the waters of Texas, there was enacted by the Legislature an anti-stream pollution law designed to prevent the uncontrolled flow of pollution into the streams. The Legislature had already set up a Game, Fish and Oyster Department to foster and conserve the natural resources. The Legislature vested in this Department the duty of enforcing the anti-pollution law in so far as the fish life of the streams and waters of the state is concerned.**

### Crank-Case Drainage

One of the sources of municipal pollution to which we are giving considerable attention is that of the drainage of crank-cases from automobiles. The oil taken from one crank-case is not of serious consequence, but the oil taken from thousands of crank-cases does present a grave problem. If the municipalities would provide the necessary regulations to penalize those who put crank-case drainage into sewer systems, this source of pollution might be readily eradicated.

### Oil-Field Pollution

Oil-field pollution can be successfully handled. Where we have been able to obtain cooperation from producers of oil they have provided the necessary traps or dykes to keep oil from going into the streams adjacent to those fields. Salt water, that is often encountered in oil fields, can likewise be taken care of. Cavity wells and storage reservoirs have been found in many instances to successfully care for the salt water, releasing that held in storage, when flood conditions prevail, and thus minimizing the damage that might otherwise be done by a large amount of salt water going into the fresh water lakes or streams of this state.

### Salvage of Wastes

Many municipalities have long ago recognized that sewerage and other waste that would otherwise pollute any stream into which it went, could be cared for through modern disposal plants, and such disposal plants can also be provided for packeries. Others have found that there is considerable profit in the salvaging of crank-case oil, proving that this oil can be placed to economic use, and just as economies have been worked out by some in the matter of salvaging crank-case oil, so have economies been worked out by refineries and oil producers in preventing the waste of oil from their fields and plants. While it may not be successfully claimed that oil pollution of the streams of this state would endanger the public health, there are other sources of pollution that do seriously endanger the public health, and facing, as we are, a consideration of all the problems of pollution, there is no doubt that this work has an important bearing upon the welfare of our fellow-beings.

### Cooperation versus Prosecution

We have sought at all times to obtain the cooperation of the parties heretofore guilty of pollution, before resorting to court action. In most instances we have obtained splendid cooperation, but we have not hesitated to resort to the courts when the proper sort of effort has not been made by those charged with the disposal of the various forms of waste that, to the streams, mean pollution.

### Organization Available

There is some reason why this work of anti-pollution should be placed in the hands of the Game, Fish and Oyster Department. Not only are we concerned with the results of pollution and the damage done by polluted streams but in order to properly care for the enforcement of the game and fish laws of this state, we have deputies in every district of the state and, in addition to their other duties, we have called to the attention of these deputies that whenever the streams of their territory are polluted, they are to get information on the sources of this pollution. These

men are working under the direction of others who are devoting their entire efforts to the solving of this problem. Other states have achieved some degree of success, working through an agency directly concerned with the pollution problem.

It is particularly fortunate that nowhere in Texas has the problem of pollution become so serious that we must surrender. In some other states where industrialism is more highly developed and in those states that are almost entirely dependent for an economic livelihood upon their industries, the white flag of surrender is flown on some of the streams. The blight of pollution has so completely settled upon some of the streams of those states that authorities believe the task of rescuing them is too gigantic to be possible. The streams and lakes of Texas are among our greatest and most beneficent heritages. With an aroused public sentiment and understanding of our problems, it will be possible in a comparatively short time to rescue from pollution those streams and lakes which have suffered most, and to definitely and forever remove this menace from some of the streams that yet are pure.

The law, properly administered, will be able to prevent pollution of other streams, but the public must realize that a group of men bent on serving their own interest should not be allowed to despoil their waterways and prevent the public from enjoying the benefits of these watercourses. Nor should a municipality, intent upon finding an easy way of disposing of its waste, be permitted to use the streams of this state as part of its sewerage system.

ACKNOWLEDGMENT.—From a paper presented before the Texas School for Sanitarians held at Houston, Texas.

# Electric Pumping System Adopted by Buenos Aires for Its Water-Supply

*By* C. C. BATCHELDER

BUENOS AIRES obtains its water-supply from the great Rio de la Plata that sweeps on to the ocean past this queenly city of South America. Steam-operated pumps raise the water to a point where it is purified, and pass it along for city use, but soon the steam pumps will be replaced by electrically driven units. General Electric motors and accessories, in combination with Worthington pumps, will take care of something more than the total load now handled by the steam pumps—45,000 cubic meters per hour as against 41,150 cubic meters. In addition, four electric pumping units already installed will further augment the capacity of the pumping installation.

The water is first raised from the river level to settling-basins where it is treated with coagulant and from which it passes by gravity to the filters. The new contract calls for three low-head pumping sets to bring the water up from the river, and six sets for handling the filtered water and delivering it to the city service mains. For each of the three low-head sets, a 700-horsepower, 6,300-volt, 3-phase, 50-cycle synchronous General Electric motor with direct-coupled exciter will be directly connected to a 54-inch Worthington centrifugal pump running at 250 r.p.m. These pumps will have a normal rating each of 15,000 cubic meters per hour at a total head of 10 meters and, to meet the variation of river level, will be capable of operating at heads between 9 and 11 meters.

The six units for the filtered water will each include a 2,100-horsepower motor with direct-coupled exciter, direct-connected to a 30-inch Worthington centrifugal pump running at 600 r.p.m. The pumps will have a normal capacity each of 7,500 cubic meters per hour, capable of operating at heads between 58 and 66 meters, and thus taking care of variations of water-level in the inlet tunnel from the filters and variations in the discharge pressure due to the varying demand for water.

The motors of the filtered water units will be ventilated by ducts extending outside the building, but, for the river water station, motors will be of the standard open-type design. Complete switchboards for both stations will be installed and five Nash Hytor vacuum pumps with direct-connected motors will be used for priming. There will be five 100-kva. three-phase transformers for lighting and auxiliary power, and a 15-ton traveling crane will be installed in the filtered-water station.

### History of Supply

It was in 1869 that a public water-supply was first provided for Buenos Aires, consisting of two steam pumping units each with a capacity of 225 cubic meters per hour. With the growing population, the pumping capacity was increased, and by 1912 had reached 9,150 cubic meters per hour. Then a new station known as Palermo was built, having an initial equipment of eight vertical steam-engine-driven sets, each with a capacity of 2,750 cubic meters per hour. In 1921, two turbine-driven geared centrifugal pumps, each of 5,000 cubic meters per hour capacity, were added to Palermo, bringing its total hourly capacity up to 32,000 cubic meters, which with the old plant provided a water-supply of 41,150 cubic meters. The demands of the city have caught up with this rate of supply, and the situation has been met in the spirit of modern times by complete electrification.

It is of interest that the growing demand is due not only to a rapid growth in population but also to a great increase in consumption per inhabitant. Records of the Water Department show that in 1890, with a population of 457,000 receiving service, the average daily consumption per capita was 125 liters, while in 1925, with a population of 1,874,000 in the district covered, the average daily consumption per capita had increased to 327 liters.

# For State Uniformity in Municipal Civil Service Requirements

IN most states of the Union the state civil service is entirely unconnected with municipal civil service. This limits the usefulness of both. There are only a few cities whose administration is of sufficient size to justify a civil service board or department. On the other hand, eligibility in service of the state does not make one eligible for county and city positions within that state. The result is a very "scrappy" civil service system indeed. What is needed, I think, is state-wide civil service eligibility with opportunity to transfer from one locality to another as promotion appears. Under our system of government, local appointments are made by local authority, but the state has an interest and a right to establish them uniform throughout the state. If some state will do this, it will do something much to its advantage and it will also create civil service professions. There is one branch in which this has been done already, and that is the teaching service. The rule in all progressive states now is state-wide eligibility for primary, secondary, or administrative school positions. Very largely by reason of this fact, the public teaching service has adopted standards of professional training, has evolved a satisfactory administrative mechanism, and is more scientifically organized, recruited, and provided for than for other branches of public employment. The one thing which makes it a good profession is the mobility that exists within it—the fact that a man's success as a city superintendent in one town makes him eligible and sought for by the school administrations of larger towns.

—David P. Barrows in *"An Outline of Careers."*

# Can Filters Be Operated Satisfactorily at Variable Rates?

*By* HARRY N. JENKS

ASSOCIATE PROFESSOR OF SANITARY ENGINEERING, IOWA STATE COLLEGE, AMES, IOWA

IT is customary to rate the capacity of a rapid sand filter at 125 million gallons per acre daily, even when the quality of the applied water varies over a wide range as regards bacteria, and color. Under certain favorable conditions, however, it appears quite proper to design filters on the basis of a higher rate of filtration. A notable case in point is the new filtration plant at Detroit, Mich., where the allowable rates of filtration were considered as being approximately 160 million gallons per acre daily because of the favorable quality of the lake water. It was found, nevertheless, that deterioration of the filter effluent took place at the rate of operation of 135 million gallons per acre daily.

Taking the assumed standard rate of 125 million gallons per acre daily as the basis of comparison, the actual capacity of a filter to deliver a satisfactory quality of effluent at higher rates depends primarily upon the physical conditions under which the filter operates, and upon the nature of the overloading as related to the extent and duration of such overload. As filters are seldom operated at overloads on a constant rate of filtration basis, the question of filter capacity arises only when such plants are operated at variable rates.

It is contended by some designers that filters should not be operated at other than a constant rate of filtration. Based on my experience in the operation of a 32-million-gallon-daily filtration plant in Sacramento, Calif., I am inclined to doubt the general applicability of the theory that filters should necessarily be operated at a uniform rate. At the plant mentioned, the rate of filtration is continually varying to meet the fluctuating demands of the distribution system and if overloading is kept within certain ascertained limits, the quality of the effluent is entirely satisfactory.

Just what these limitations are and may be in other plants was studied by the writer from comprehensive data gained through a season of continual filter overloading at the Sacramento plant. Consideration should be given to the subject by those designing medium-sized filtration plants, particularly where there is limited filtered water storage with consequent need for speeding up the rate of filtration to meet peak demands. As such a situation may frequently arise in small communities, there appears to be good reason to believe that the designer may avail himself of the ability of the filter to withstand reasonable overload in order better to enable himself to design elevated tanks or balancing reservoirs of smaller size than might otherwise be possible.

### Effect of Overloading on Length of Filter Run

Overloading causes premature clogging of the filter with consequent shortened filter runs and excessive use of wash water. This condition during times of heavy demand has the further disadvantage of curtailing the possible hours of operation of the filter. This, of itself, tends to induce even higher rates of filtration and thus to establish a vicious circle to the serious impairment of filter operation. Shortened filter runs of themselves do not necessarily result in an unsatisfactory product from the filter, but they do indirectly contribute to the weakening of that main line of defense against bacterial contamination of the filtered water.

**Studies of Overloading Would Improve Filter Plant Design**

**The studies of filter plant overloading which have been made by Prof. Harry N. Jenks are particularly valuable for the small community where the funds available for construction are limited. Within certain limits, variable operation of filters will permit the reduction in size of storage reservoirs and tanks, provided such reduction does not bring the capacity below standard requirements for fire fighting.**

The most valuable conclusion that has been drawn from the extensive studies made at Sacramento is that the length of filter run decreases much more rapidly with increases in duration of overload than with increases in the overload itself. This fact furnishes corroboration of the assumption that filters designed to operate at variable rates may run at considerable overload providing the peak rates are of comparatively short duration.

### Effect of Overloading on Quality of Effluent

Following the lines of investigation of filter overloading still further, the mass of laboratory data for the period under review shows a marked decrease of filter efficiency as a result of overloading beyond fairly well-defined limits. A careful analysis of the extent of overloading interpreted in the light of observed serious impairment of filter operation with regard to quality of filter effluent, led to the conclusion embodied in the schedule of overloading compatible with satisfactory quality of filtered water.

### Conclusions

1. Provided that overload rates are kept within proper limits the operation of filters at variable rates has of itself no deleterious effect on the quality of the effluent as compared with operation at a constant rate.

2. By varying the rate of filtration to correspond to the curve of water consumption, it may be possible under favorable conditions to reduce the size of storage reservoirs or elevated tanks to an extent otherwise inadvisable.

3. Apparently, the length of filter run that may be expected when filters are operated at overload rates is equal to some constant divided by the product of the total loading expressed as a given per cent of normal and the duration of such loading. It is suggested that it would be of value to determine this constant for various types of water as treated in different plants throughout the country.

4. Filter runs are shortened to a much greater extent by the duration of overload rates of filtration than by the amount of such overload.

5. As judged by the criterion of quality of filter effluent, the permissible duration of overload decreases rapidly with increase in rates of filtration above normal.

ACKNOWLEDGMENT—From a paper read before the Iowa Section, American Water Works Association.

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## *Kansas City Drivers Sign Accident Prevention Pledge*

THE Kansas City Safety Council in an intensive campaign for the reduction of motor fatalities, especially among school children, is asking drivers to sign this pledge:

"I will drive carefully always and keep uppermost in my mind the urgent need for closer observance of the traffic laws—particularly those applying to school zones—and I will encourage others to make and keep this same pledge, to the end that the sacrifice of life may be stopped and driving may become a pleasure instead of a peril."

# Black Base Pavement in Minot, North Dakota

*By* WILLIAM W. PETERSON
CITY ENGINEER

PAVING in the city of Minot is all done under the special assessment laws of the state of North Dakota. Not more than one-fifth of the total cost is paid by general taxation against all the property in the city, the other four-fifths being assessed against abutting property.

According to a decision of the Supreme Court it is necessary to establish a paving district for each project, this district to include only the property to be assessed for the work done. A period of thirty days is given to the property owners in the district to protest against the improvement. A protest of more than fifty per cent of the property frontage is required to stop the work.

Another requirement of the law is that after bids are opened, property owners must be given a period of at least five days to file petitions for preference of type of pavement to be constructed. While this provision may relieve the City Commission from deciding upon the kind of pavement, it also gives the promotors a wonderful chance to "do their stuff." That the average property owner does not actually know what type of pavement he wants was indicated here by the fact that many signers changed from one petition to another so often that those circulating petitions required not only the date of signing but also the hour and minute. The foregoing facts are given to show how it came about that asphaltic concrete base pavement was decided upon, as at the time the specifications were written the writer had had no experience whatever with such pavement, nor had the City Commission. In fact, I believe that this is the only paving of this type in the state.

SECOND STREET, N. W., MINOT, N. DAK., BEFORE PAVING, SHOWING CORRUGATED SURFACE OF GRAVEL

In November, 1926, the city decided to pave two projects aggregating approximately 63,000 square yards. In the specifications were included 7-inch reinforced concrete; 7-inch reinforced Vibrolithic; 2-inch asphaltic concrete wearing surface and 2-inch Warrenite-Bitulithic wearing surface, either of the latter two to be laid on a base of 3½-inch asphaltic concrete, 5-inch portland cement concrete, or 5-inch Vibrolithic portland cement concrete. Alternate bids were asked on either Lake or oil asphalt.

### Petitions Approve Black Base

Bids were opened and notice given that a contract would be awarded and that petitions for preference of type would be considered. On the date set, petitions were presented for asphaltic concrete and Warrenite-Bitulithic surfacing, the majority for both types asking for the asphaltic base. After checking the petitions, it was found that neither petition represented sufficient property frontage to control the type of wearing surface, but that together they did designate the asphaltic base. The contract was therefore awarded for Warrenite-Bitulithic surfacing on 3½-inch asphaltic base. In selecting the wearing surface, preference was given Warrenite-Bitulithic for the reason that approximately 38,000 yards of this type has given entirely satisfactory service here for over eleven years without any maintenance. Since the award of the first two projects of 63,000 square yards, additional contracts for 95,000 yards have been awarded, making a total of 158,000 yards of this type, of which 120,000 yards were constructed during the season of 1927, the remaining work to be done in 1928. Approximately half of this pavement is on streets that had formerly been improved with curb and gutter and graveling.

SECOND STREET, N. W., IN MINOT, N. DAK., AFTER PAVING WITH BLACK BASE AND WARRENITE BITULITHIC TOP

The specifications under which this pavement is being constructed are the Standard Warrenite-Bitulithic specifications, Form W-H 1A, with the exception that the maximum size of mineral aggregate in the black base was increased to 2½ inches. The asphalt used in the surface is Lake asphalt with a penetration of 55 to 65, and that in the base, oil asphalt with the same penetration.

### Aggregate

The coarse aggregate used is a mixture of gravel and crushed stone taken from pits owned by the city, the gravel being screened and all oversize crushed. The gravel is good, hard particles with very little material classed as shale. The sand in the city pits is very coarse so that it is necessary to mix fine sand to get the proper grading. All grading of aggregates in both base and surface is controlled by an engineer furnished by the Warren Brothers Co. of Boston, Mass., the grading of the base being done without charge to the city.

### Street Widths, Curbs and Gutters

The street widths vary from a maximum of 50 feet to a minimum of 24 feet on some residential streets, the crown used being from 4 to 7 inches, varying with the width of the street and also with the longitudinal grade of the street.

In former years paving was constructed with a 6-inch curb without a gutter, the paved surface serving as a gutter, but as it was found very difficult to get proper drainage on the low grades, a combined concrete curb and gutter is now used, the curb being 6 inches high with an 18-inch gutter having a 1½-inch drop toward the curb. As this curb is constructed prior to the paving and the forms checked before pouring the concrete, much better grades can be obtained than without the use of a gutter, the 1½-inch drop taking care of any small irregularities that may occur, so that no water stands on the paved surface.

### Precautions for Success

One of the most important qualities of any pavement is a good riding surface, which is more difficult to obtain in an asphaltic pavement than in almost any other type, this being especially true with a black base. Our experience has been that the following precautions will improve the quality of the surface:

1. Subgrade must be exact to grade.
2. All soft spots must be eliminated.
3. Base must be rolled and finished to exact grade.
4. Base and surface material must be of uniform temperature.
5. Two rollers are required in rolling wearing surface, one working longitudinally, the other transversly.

The pavement in Minot presents a very pleasing appearance and has a riding surface as good as the average pavement, and while the permanence can only be determined by time, all indications are that the pavement will be very durable.

### Paving Program

When the present paving program is complete, the city of Minot will have 14.3 miles of paved streets, 10.6 miles of gravel-surfaced streets on which curb and gutter has been constructed, 4 miles of graveled park drives, 2.2 miles of graveled state highways, and 21.9 miles of earth streets, making a total of 53 miles of streets.

Hanlon and Okes of St. Paul, Minn., are the contractors for the present paving, the contract price being $2.31 per square yard, which is considered a very low price for paving in this state.

# Side-Hill Construction by Tacoma Water Department

SUPERINTENDENT WATER DIVISION, TACOMA, WASH.
*By* W. A. KUNIGK

THE Water Department of Tacoma, Wash., has developed an interesting type of traveler which it has used on several jobs in the rebuilding of sections of the Green River gravity pipe line in places where the grade was not accessible for derrick or crane work. The accompanying illustration shows the traveler handling 30 feet of 64-inch diameter Lock-Bar steel pipe on side-hill construction, where the pipe line was supported on concrete piers because of sliding ground.

RIG FOR HANDLING STEEL PIPE AT TACOMA

The hand winches shown at each end pick up and hold the pipe in position during its journey. They are also used to tilt the pipe when making the assembly with the preceding section. When laying pipe down a steep grade, a third hand winch is used, fastened to the top of the traveler, and a bridle line is passed through lead blocks on the traveler and through a snatch-block at the end of the hauling line. With this arrangement of winches, it is possible for the men operating the winches absolutely to control every movement of the pipe. The man operating the hoist lowers the traveler and pipe within about 6 inches of its proper position for making the connection. The manipulation of the pipe itself is then handled by the winches. The winches used are all steel 5-ton hand hoists with two speeds, 1,500 pounds capacity at 1:4 ratio, and 10,000 pounds at 1:24 ratio. The weight of the winches is 110 pounds each.

The spreader timbers below the bottom of the pipe are loose and can be removed during the operation of the winches. This method of handling large pipe is speedy and safe and has given very satisfactory results in Water Department work in Tacoma.

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### *Groups for Deliberation; Individuals for Administration*

WHAT can be done better by a body than by an individual is deliberation. When it is necessary or important to secure hearing and consideration to many conflicting opinions, a deliberative body is indispensable. Those bodies, therefore, are frequently useful, even for administrative business, but in general only as advisers; such business being, as a rule, better conducted under the responsibility of one.

—JOHN STUART MILL.

# Trolleys Heading Toward Graduated Fares With Ten Cents Base

*By* WALTER JACKSON

FARE AND BUS CONSULTANT, MT. VERNON, N. Y.

IN the old days of the electric railway, the 5-cent cash fare was well-nigh universal, except for less-than-a-nickel ticket fares in Canada and some of the Central States.

With the upset brought about by the World War and the increase of "roll-your-own" transportation, electric railways were compelled to seek higher fares. Most of these were on the order of 7 or 8 cents cash. Hence, they involved awkward change-making, which could be only partially offset by the use of tokens. The most popular token rate with the public is 6¼ cents, but this rate of fare is too low for most operators. The ratio of token sale tends to drop rapidly for such combinations as seven for 50 cents or six for 45 cents because of the higher investment or bill-breaking amount involved.

One-man operation—now recognized as an economic necessity if electric railways are to give service that can pull auto-owners—is peculiarly sensitive to any delay in fare collection, because it is not safe to start the car until the fare transactions are completed.

The use of a token or ticket rate lower than the cash fare was, of course, a recognition of the fact that the more frequent rider is entitled to a lower rate. However, cash and token rates are not enough to distinguish between casual and regular riders. With tokens selling at say six for 50 cents, the twice-a-day rider has to pay just as much per ride as the patron who rides but two or four times a week.

### The 5-Cent Permit Card

As early as 1919, Richard Schaddelee, an electric railway executive, and the writer put into effect two innovations which were intended to take care of the regular rider.

Mr. Schaddelee's plan was to sell what he termed an "identification ticket" for some fixed price per month, ranging from 50 cents to $1 in practice. The holder of such a card would then pay 5 cents per ride on exhibiting his card. All others rides would pay a 10-cent cash fare.

On Mr. Schaddelee's properties, this plan was inaugurated in synchronism with a rise in fare from 5 cents, 7 cents and 9 cents. On the 5-cent and 7-cent properties, the increase to 10 cents was sufficient to produce some increase in revenue, but there was a decrease in riding. It turned out that the permit-card riders did little more riding than they had to. They yielded an average of about two rides a day. There were no token rates on most of these permit-card railways.

As noted above, the plan began with a so-called "identification card." The purchaser had to go to some designated office and sign his card with the promise that he would let no one else make use of the commutation privilege. This restriction was found to be impracticable, since the operator of a street car has no time to identify passengers.

**To Encourage Street Car and Bus Riding**

**by the weekly pass or permit card plan may have two advantages in many cities—(1) making possible better service by the local transportation companies, and thus (2) encouraging travel in public passenger vehicles to an extent that will lessen traffic congestion in downtown streets from individual automobiles.**

**It is for these reasons that THE AMERICAN CITY has asked Mr. Jackson to outline briefly the history and present trends in graduated fares on electric railways.**

Early in 1927, after a number of the original permit-card installations had disappeared in the endeavor to get more revenue, the idea was revived at Fort Worth, Houston and San Antonio in a more liberal form, vis., transferability and weekly instead of monthly fee. Fort Worth may be taken as the example, inasmuch as it started the movement.

The fare in Forth Worth had been 7 cents to all. This was not only an awkward fare from the change-making standpoint, but also an insufficient fare. The management offered the community a new rate of 10 cents cash and 8 1/3 cents token; but was willing to modify this still further by the issue of a 40-cent permit card sold entitling the holder to ride as often as desired at 5 cents per ride, without any identification features. This made it possible to sell the card directly on the cars.

The permit card is dubbed locally a "nickel pass." The cardholder, however, averages about 7½ cents fare instead of a nickel; nor is this a pass, inasmuch as a permit-card holder must stop to yield up a coin or transfer.

The new scale has produced a handsome increase in revenue with less loss to riders than if the increase had been to 10 cents and 8 1/3 cents without a permit card to ease down the fares for regular riders. The latter are said to average about sixteen rides a week.

The chief merits of this plan are: reduction of change-making operations over the former 7-cent fare; graduation of the fare in proportion to use of service. It will be observed that even the permit-card rider is paying a higher fare per trip than he did before.

An accompanying cut shows one of the European ancestors of the permit card, to wit, the "Erkennungskarte" or "recognition card" of the Vienna Tramways.

Gemeinde Wien — Städtische Straßenbahnen.
Gegen Vorweisung dieser bis ..... giltigen
Erkennungskarte Nr. .....
zahlt .....
wohnhaft XIII., .....
60 II
5 1
auf der städtischen Straßenbahn für eine Fahrt auf der Strecke Haltestelle Preyergasse-Lainz (Verbindungsbahn) nach Mauer Haltestelle Langegasse oder umgekehrt an Werktagen bis 9h nachm. den Ausnahmstarif von 30 Hellern, nach 9h nachm. oder an Sonn- und Feiertagen den Ausnahmstarif von 40 Hellern.
Wien, am 26
Der Direktor:
Vordruck 1286. 2000. II. 19.

"RECOGNITION CARD" OF THE VIENNA TRAMWAYS, A EUROPEAN ANCESTOR OF THE AMERICAN PERMIT CARD

UNLIMITED-RIDE WEEKLY PASS OF THE NORFOLK, VA., RAILWAY AND BUS SYSTEM

The earlier installations of the writer's unlimited-ride, transferable weekly pass were made as an additional or optional rate to regular riders without raising any other fares. There are several score installations of this kind.

Increasing costs and the necessity for going to higher standards of equipment and service led later to the use of the weekly pass in connection with the increase of cash, or cash and token rates. Among such installations with a 10-cent base fare are Jacksonville, Fla., Jamestown, N. Y., Mansfield, Ohio, and Norfolk, Va.

In this type of fare graduation, an increase in revenue is obtained without decreasing the number of riders. Furthermore, the regular rider actually pays less per trip than before, although he usually yields more per week. To illustrate:

On the Norfolk Division of the Virginia Electric and Power Company, the fare was raised from 6¼ cents and 7 cents to 8 1/3 cents and 10 cents. The company, however, agreed to abolish two-zone and three-zone fares as a partial offset to the higher rates. It also agreed to sell an unlimited-ride, transferable weekly pass for $1.50.

The net result has been an increase in revenue and an increase in riders. The pass rider, after deducting the transfers in the count of his rides, still gets 28 to 30 net rides a week. Hence his fare is about 5 cents against the former 6¼ cents. If he was a longer-haul rider before, his old fares were either 12½ cents or 18¾ cents!

The weekly pass plan, therefore, saves the regular rider from paying a higher fare than before, provided he makes use of the service oftener than two compulsory rides a day. It is not economically correct in the long run to grant a lower rate for use of the service during the peak hours only. The Norfolk passholder may be considered as paying the full 8 1/3-cent fare for his twelve necessity rides costing $1. He gets another eighteen rides, possibly, for 50 cents; but these rides are taken when he does not have to ride and when there is plenty of service to spare.

Unlike the permit-card holder, the passholder has no change-making and no transfer bother, either for himself or the car operator.

At first sight it would seem that the payment of a weekly fee of 25 to 40 cents would have more appeal than payment of $1 to $1.50 a week. The difference in attractiveness, however, is so great that in the one city where both plans have been tried, the number of persons paying $1 a week for a pass (averaging twenty-one rides) is almost double the number who pay 95 cents, the cost of the 30-cent fee plus the thirteen rides at 5 cents actually taken. The extra companion rides brought by weekly passholders in the off-peak hours also may have had something to do with the fact that the number of 10-cent fares was about double what it is now.

# Lakeland Has "Popular Policemen" Contest

*By* R. E. HARDAWAY

THE Civitan Club, Lakeland, Fla., recently conducted a two-months' popularity contest which promises to have permanent and far-reaching effects. It was different from the general run of popularity contests as ordinarily conducted among pretty girls, radio announcers, prize fighters, and preachers. Beauty of countenance and the weight of personal influence did not enter in. Instead, ballots were secretly taken to determine what member of the force combined the highest ideals of manhood and policemanship with the highest standards of public service.

The idea of the Civitan Club in starting the contest was to establish a stronger bond of human understanding between the average citizen and the cop on the corner. Incidentally, it was designed to convince the policeman that the traffic violator was oftener a victim of his own bad judgment than a wilful offender. While the contest was in progress, a wider appeal was made by a who's who of policemen conducted through the daily papers. This familiarized thousands of citizens and visitors with the names and appearance of officers and stimulated their interest in voting, which was by coupon and which was limited, so far as the individual voter was concerned, only by his ability to buy and cut papers.

As soon as the contest was well under way, a marked let-down in the number of arrests was noticeable. The absent-minded man or woman who drove past a "Stop" sign, or exceeded the parking limits by a few minutes, no longer automatically received a "tell it to the judge" ticket or its alternative, a "bawling out" by a policeman who did not happen to have digested his breakfast very successfully. Such procedure had become of too frequent occurrence. But, suddenly, policemen began to see themselves in the role of public servants vested with the dignity and authority of the law, rather than as bosses and bullies. They saw that the general efficiency of traffic control was furthered by their taking in tow only the most flagrant offenders.

Now, speed laws and general ordinances for control of traffic, pedestrian and vehicular, are being strictly lived up to; but the notable fact is that since the contest this is being done by kindly advice and admonitions from the policemen rather than by sentences handed down by Judge DeLoach from his bench. City commissioners, realizing that an ideal police department should be maintained for keeping the peace and avoiding accidents, have encouraged this new era of good fellowship. The city takes the progressive view that it is better policy to do without receipts from fines and court costs than to arouse in citizens and visitors a sense of persecution.

On the other hand, citizens are awarding the cop on the corner the consideration due another human being and a fellow-citizen. He no longer stands aloof. Often, he is seen the center of a group of business men and tourists, discussing the issues of the day, keeping a weather-eye out for the traffic meanwhile, and interrupting himself with such directions as these:

"Wait a minute, lady. The red light is against you. You musn't get run over." "You'll find the First National Bank on the next corner, left. You'll have to hurry, mister. It closes at two." "Sure," he will say to a passer-by, "that's the right road to Tampa. Four blocks ahead, two to the left. You can't miss it. Good luck to you." "Thank you," comes back from the car as the driver steps on the gas, and with a "That's a good town," drives on.

The silver loving-cup offered by the Civitan Club was awarded to Officer O. A. Anderson, who was also the recipient of several valuable prizes given by merchants and other citizens who, while not members of the Club, wished to participate in the affair. Among these prizes were a handsome Kurdistan rug and a bolt of silk.

*See also*
**"The Policeman As a Community Advertiser"**
***Page 93 of this issue***

# Water-Meter Repair Practice in Rochester, N. Y.

*By* THOMAS C. LYNCH

SUPERINDENDENT OF METER REPAIRS, BUREAU OF WATER, ROCHESTER

THERE are seventeen different makes of water meters in service in Rochester, ranging in number from twenty-five to thousands for each make. For fifteen of the seventeen makes of meter, repair parts are carried in stock; the manufacture of the other two makes has been discontinued. Some of the meters have been in constant service for more than thirty years. They are removed for repair when out of order, or removed for tests when they have not been taken from the services for any other cause after a number of years. Each meter as it is brought into the shop for test, unless it has been repaired during the preceding year, is taken apart and cleaned and each of its parts examined to determines its condition. If any part is worn enough to require attention, it is refitted, or a new part substituted.

New meters received from the factory must show an accuracy of 98 to 102 per cent, and this requirement is also adhered to in tests of repaired meters.

### Periodic Testing

A careful record is kept of each test, but even if it shows a degree of accuracy within the requirements, the meter is taken apart, examined and treated in the same manner as though it had stopped registering. This is in the form of an insurance, to be sure that none of the working parts are on the point of breakage. After the meter has been examined carefully and has been reassembled, it is again tested and both the tests are entered on the records. The meter is then reset on the service from which it was removed, if its size is ⅝-, ¾-, or 1-inch.

### Care of Large Meters

On meters larger than 1-inch, it is our practice to keep a meter of each size in the shop as a spare, this meter having been repaired and tested, and is placed on the service from which a meter of the same size is removed. The meter taken from the service is brought to the shop, repaired and tested, and is held to be used as occasion requires.

The plan of taking large meters apart on the premises on which they are set, and installing new parts or entire new gear trains, has never met with favor in Rochester and is done only when a meter has been so surrounded by piping, partitions and other obstructions as to make it difficult to remove.

Repairing a meter on the premises of course puts it in working condition again, and its registration after being repaired may show the usual average consumption. Our practice, however, requires that when any one of our meters needs repairs, we shall have on our records the exact degree of accuracy of registration. This, of course, makes it necessary to bring all meters to the shop unless portable testers are used. We do not favor portable testers, preferring to use our shop equipment.

### Cost of Maintenance

Based on approximately 58,000 meters in use in 1926, our cost of maintenance was 50 cents per meter. In examining the yearly reports of other cities, we have noted cities which give figures for the maintenance per meter much lower than the figure given for Rochester. A few years ago in a very large city having double the number of meters in service in Rochester, the maintenance cost was given as only 12 cents per meter. As this was the record low figure, our Superintendent wrote to the men in charge of meter maintenance in that city for more detailed information. The reply stated that the meters had been removed for test only and that if, when tested, the meter was within 10 per cent of correct registration, nothing more was done, except to reset it. The response did not state whether the meters ran fast or slow, but simply that 10 per cent was considered near enough to correct registration. This answer seemed to explain away most of this difference between the 12 and 50 cents maintenance cost.

### Cost of Repair and Revenue Related

It seems that most cities using a number of makes of meters handle their own repairing, carrying repair parts for each make of meter and requiring a close degree of accuracy in their repaired meters. In these cities, the cost of maintenance per meter is higher, but the amount of revenue received by the city from these accounts must also be greater. In cities doing their own repairing, but having a limited number of makes of meters in service, carrying a smaller stock of repair parts, and allowing a greater degree of latitude as regards accuracy required, there is bound to be a loss in revenue. If a very liberal allowance of accuracy is permitted, say from 5 to 10 per cent for repaired meters, much saving in time, in labor, and in the use of meter parts results, and the cost of maintenance is bound to be lower, but it also follows that the degree of accuracy in such meter is much less than when a meter is repaired in the department shops and only a 2 per cent variation in accuracy is permitted.

### Routine Testing

In Rochester, between 4,000 and 5,000 meters are removed per year for failure to register, damage by freezing, damage by hot water, property vacant, for test, leakage and other reasons, and there are very few of the number removed that are not put through the regular routine of taking apart, cleaning and examination of all parts of the meter. The reason for excepting those which are not taken apart is that they have had that treatment within the preceding year. Bills are rendered to the property owners for the labor and material costs of repairing meters that have been damaged by freezing or by hot water, or for damage caused to the meter by carelessness of the owner or tenant of the property which the damaged meter supplies. Repairs to meters for other causes are not charged to the owner.

ACKNOWLEDGMENT.—Prepared from a paper presented before the New York Section, American Water Works Association.

# The Better 'Ole

*By* ARTHUR A. TOPPING

What ho! for a swim in the city pool,
Where the water's clean and clear and cool;
The springboard staunch, and the lifeguard keen
Lest sorrow threaten to cloud the scene;
And close at hand there's a first-aid kit
That will help you back to "feelin' fit."

Boy! but we've got it all over Grandad
With his wonderful tales of when he was a lad.
How I wish I could show to the dear old soul
Our twentieth-century swimmin' hole!

*—Copyright by Arthur A. Topping, Bradford, Pa.*

# Extensive Texas County Road Project

*By* A. J. WISE
COUNTY ENGINEER, HARRIS COUNTY, TEXAS

THE LaPorte Road, lying between Houston, Texas, and the bay-shore town of LaPorte, a distance of 17.4 miles, was one of the first highways to be constructed under the $7,000,000 highway bond program of Harris County. The road is used by most of the people of the city and county at one time or another, for the reason that it serves as a means of going to and from the bay shore region.

For convenience of construction and in order to avoid as far as possible inconvenience to motorists, the highway was divided into four sections. Three of the sections lie between Harrisburg, a suburb of Houston, and a railway crossing of the Southern Pacific 13.5 miles distant, or 4.2 miles from the town of LaPorte. The fourth section was laid out over an entirely new route parallel to the railroad, to an underpass which eliminated the only two dangerous grade crossings. The road section was built to a 36-foot crown, including a 20-foot solid concrete slab and 8-foot dirt shoulders. The contract for 4-foot shell shoulders was let separately.

### First Sections Completed Quickly

A contract was made with the Tibbetts Construction Co., of Fort Worth, on a low bid of $506,865 plus a $1,500 bonus for completion of each of the first three sections by fixed dates. The first section of the road, 3.8 miles in length, was to have been completed under the contract by June 1, but was finished April 30, a month ahead of schedule. The second section was finished the last of May, and the third section at the end of June. This record was by far the best ever made in southeast Texas. The last section, purposely delayed for several weeks to give the new grade time to settle sufficiently, was finished

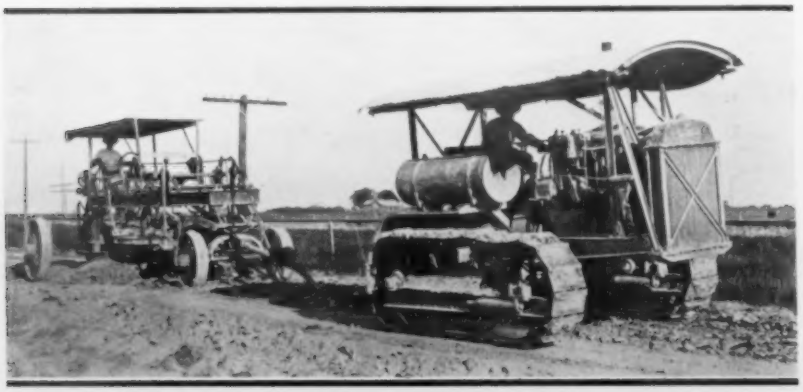
A. J. WISE, COUNTY ENGINEER OF HARRIS COUNTY, TEXAS, IN CHARGE OF THE $7,000,000 COUNTY HIGHWAY PROGRAM

the last of September, except the underpass and four blocks in the town of LaPorte.

### Paving Within Cities

The paving of the curved underpass section required about one week, and the 60-foot paving in LaPorte about another week. The added width, about 20 feet, was handled by the Tibbetts Construction Co. through contracts with property owners. The financing of the special job was handled by the company through a local bank. In this way, the company was relieved of the necessity of carrying long-time county paper.

In view of the decision of the Commissioners' Court to pave the Harrisburg section as a city street with curb and gutter, the demand of the Harris County Auditor for a separate bid for the 45-foot section, was acceded to. A. M. Arnold & Co. were successful bidders on the concrete base with Uvalde rock asphalt surface.



CATERPILLAR SIXTY WITH RUSSELL GRADER, REMOVING OLD ASPHALT TOPPING

### Completion Celebrated

Toward the completion of the entire project, the towns-people of LaPorte and the bay shore region began to contemplate the tremendous importance of a 20-foot all-concrete highway to Houston and the consequent lessening of the distance by perhaps one-third the driving time. They decided on a big festival and public celebration at LaPorte at the time of the official opening of the new section 4. Houston business men at once expressed their approval of the celebration plan and offered cooperation. The notable event occurred on November 1. The LaPorte highway was publicly acclaimed "a peach of a road" by Judge W. O. Huggins, President of the Gulf Coast Good Roads Association. The remarkably smooth riding surface of the highway has merited the praise of thousands of motorists who have passed over it.

### The Highway Design

The highway is of the modified Bates type of construction, 9-6-9 inches with 38 pounds of wire mesh per 100 square feet. No expansion joints were used except where the work was interrupted for more than 30 minutes or at the end of a day's run. In sections 1 and 4, the last two completed, the usual expansion filler was omitted; a dowel joint was used.

Where expansion joint felt had been used, it was observed that some spalling occurred. On account of the compression near the surface of the pavement caused by tamping, it was found that the concrete within an inch or two of the surface was closer together than at the bottom. This caused an uneven joining of the slabs, with some consequent spalling when compression occurred. By omission of the bituminous filler, unevenness of compression was eliminated. Thus far, there has been no blow-up or the slightest indication of a possible rupture. Cracks have occurred in the first pavement laid, about 100 feet apart on the average. These have been promptly filled with asphalt preparations.

The 28-day tests on cylinder which were made daily show an average crushing strength about 50 per cent above the contract requirement, which was 3,000 pounds per square inch. Core tests have not yet been made.

Construction has been in compliance with Government standards. At the outset of the present $7,000,000 highway

LAKEWOOD FINISHING MACHINE OPERATING NEXT TO THE FOOTE MIXER, LEVELING THE MIXTURE, TAMPING IT TO REMOVE VOIDS, AND THEN LEVELING IT AGAIN EVEN WITH THE FORMS

program, observation trips were made to the Arlington Experimental Farm and the Bates Test Road in Illinois. The latest methods were studied also in most of the states north of the Ohio River. The knowledge gained in this manner was of course coupled with knowledge of past experience in highway construction in the low-lying coast country of southwest Texas, 30 to 40 feet above sea-level.

Fortunately, for the first major project under the bond issue, the contract was made with a firm of high standing who showed themselves anxious in every instance to do a good job.

### Good Records Made

The pouring of concrete started on April 4, and the largest records were made during that month and in May. A total of 944 lineal feet was laid on April 7; 744 lineal feet on April 10, 1,522 lineal feet on April 14 (in 14 hours and 15 minutes straight working time); 1,322 lineal feet on April 30, 1,392 lineal feet on May 9; and 1,613 lineal feet, or 3584.4 square yards, in 14 hours and 44 minutes on May 26.

The Tibbetts Co. was equipped with the most modern machinery, which was kept in excellent condition. In the main the equipment consisted of Johnson loading bins, an Orton ¾-yard clamshell bucket crane, Lakewood subgraders, a 27-E Multifoote mixer, a Lakewood concrete spreader, and Heltzel 9-inch steel road forms.

The LaPorte Road is parallel to the Southern Pacific Railway for practically its entire distance. Switches are located at six convenient intervals. This made possible short hauls on all materials. The crews were able to tear down, move and set up loading bins and loading equipment in 36 hours over distances of two and three miles.

### Construction Features

The old sections of the road had a shell base, 2 to 8 inches thick, and a thin asphalt covering about 18 feet wide. This road was thoroughly scarified to a width of 20 feet with a 10-ton Caterpillar tractor and a Russell 12-foot road machine with scarifying attachment. The scarified subgrade material was reshaped to as uniform a grade line as possible and an excellent grade line established with a minimum movement of material. The road metal was thin in only a few places and the amount of new material that had to be added was negligible.

### Preparation of Subgrade

After scarifying and reshaping, a careful profile was run and a grade line established to fit the section as nearly as possible. Then the forms were set. The Lakewood subgrader was pulled over the forms to bring the subgrade to the exact section, line and grade. This was done during the noon hour and late afternoon. Use of the subgrader eliminated a large amount of hand labor.

The subgrade was thoroughly rolled and the forms carefully relined and regraded. At the mixer the raw concrete was first struck off by hand to a 3-inch thickness. The wire mesh reinforcing was put into place and the top layer of concrete immediately dumped. This also was struck off, tamped and belted by a Lakewood finisher. Two hand finishers followed the finishing machine with 10-foot longitudinal floats. A rubber hose was rolled over the surface to remove surface water. The surface was then hand belted and the sides edged.

On account of the difficulty in keeping the dirt levees watertight, the ponding method of curing was abandoned. Instead, 2 inches of earth covering were put on the new concrete and kept moist for 14 days. Water was supplied for both mixing and curing through a 3-inch water line running to a convenient pumping-station. A 2-inch line first was carried, but found to be inadequate.

### Inspection

Every carload of sand and gravel was screened and analyzed at the point of shipment and closely inspected on its arrival at the unloading point. The cement and steel were tested by the reputable firm of testing engineers, Robert W. Hunt & Co. A 1:5:½ concrete mix was used. The consistency of the concrete was held to a 1-inch slump.

During the progress of construction the road was inspected by engineers and others interested in highway building from all parts of south Texas and from other states. Apparently, all were of the opinion that the job did not suffer on account of speed.

### Program Speeded Up

The LaPorte Road now sets the pace for all other highway construction in this part of the country. The results obtained have been beyond expectation and helpful in the carrying out of the remainder of the county's $7,000,000 program. Originally, the plan was to make the construction program cover a four-year period, but, owing to insistent demands from the public, the time will be cut about in half. The program now is about one-third accomplished.

The engineering department has an unusually competent set of engineers and staff of workers supervised by the County Engineer, his first assistant, Charles R. Haile, the Superintendent of Construction, E. O. Francisco, and the Office Engineer, A. T. Dickey.

EARTH COVER WET AT INTERVALS REPLACED THE PONDING METHOD OF CURING

# A Pageant for Your Town

*By* LUCY BARTON

AMERICAN citizens of the present day need all the unifying experiences possible to help in the welding-together of different groups, different nationalities, different generations. A common tradition may serve to inculcate a common ideal; present problems may be confronted in the light of the past.

Now most people can read many books and listen to many sermons and forget all about what they have read and heard; but you do not so easily lose the impression of what you have actually experienced. Really "being" Paul Revere or Betsy Ross will give a child (or a grown person) an understanding of Revolutionary patriots clearer than he is likely ever to come to through textbooks.

Here, then, is the function of municipal drama—to draw together people of divers backgrounds and interests, to give them a chance to experience together the past upon which their common present is built, and thus to help them to live that present wisely and to built on it toward an even better future.

Pageantry is the largest and most all-embracing form of community drama. It is usually the most far-reaching in its influence, which extends from the actors to their home audiences, stirring a civic interest and pride which will remain alert for years after the event. Thus it was in St. Louis, for instance, where they still talk of the great pageant of 1912. From that pageant grew a permanent outdoor theater, constantly used during the summer months for many different sorts of dramatic and musical entertainment.

A community or municipal pageant is usually planned to set up a milestone; it may mark the centenary of a city's founding or of the birth of some honored son, or it may commemorate a battle fought on the spot. And in the unfolding of that story many other events in the city's history will be found worthy to be reanimated by present-day citizens and school children.

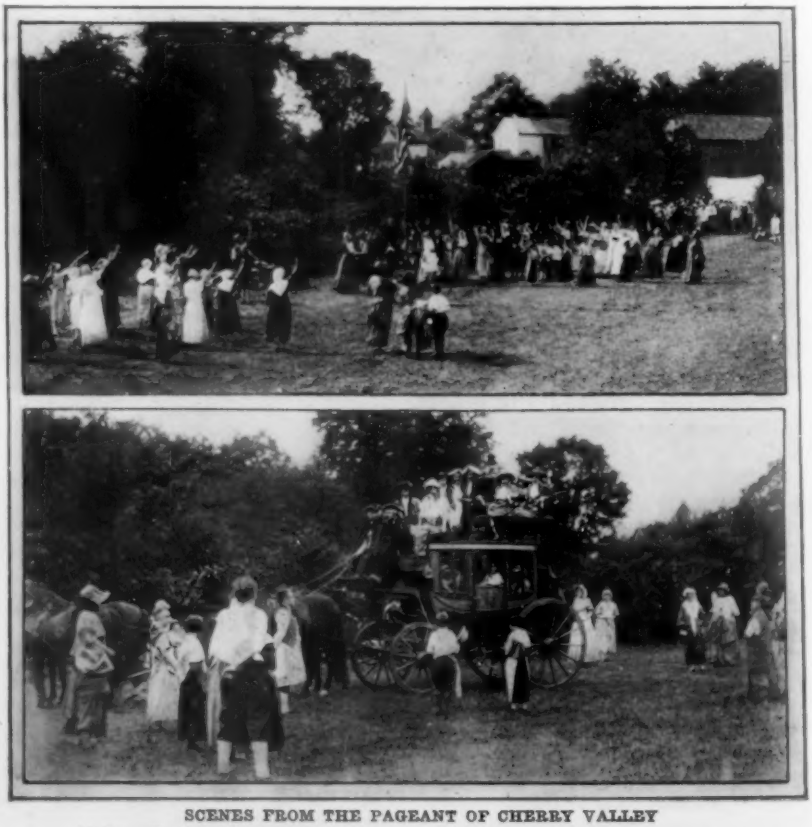
A pageant may be large or small, depending on the number of actors available, and it can be beautiful and valuable in any case. The Pageant of Empire at Wembley was performed in a cycle of three successive evenings, unrolling before immense audiences the many-centuried scroll of Great Britain's past. It employed thousands of actors, it had gorgeous panoplies, jewel-like colors, hawks and hounds and thronging processions; yet it had no greater civic value than would be inherent in a lovingly acted record of a village which could call together perhaps only a hundred persons to represent it on its impromptu outdoor stage.

### Organizing the Pageant

How is a pageant accomplished? Is it very difficult, very expensive? Does it require much professional help? To this one can best answer, "No, if you yourselves have enthusiasm, and the understanding that those who get the most out of their pageants have put the most into them."

You must be sure that you want a pageant and know why you want it. You must secure the cooperation of the townsfolk who like to organize, those who like to work at special problems such as costumes, scenery (which demands a knack at carpentry as well as artistic ability), and lights. You may, too, be lucky enough to have in your midst someone who can and will write the text of your pageant, and you must have one person willing and able to be the head and director of the whole pageant, especially of its dramatic action. Perhaps there will be such a person with training and ability in your own city, perhaps you will engage someone from afar (incidentally, this is often found to be the wiser way, because of the greater honor of the foreign prophet). Sometimes author and director are combined in the same person. But it is usually best, whoever the director may be, to pay him. The job is a full-time one and the laborer is worthy of his hire.

If your pageant is to be a fairly large one, of 500 or more participants, it can be most easily handled if it is written in distinct episodes, held together by comments of one or more speakers stationed in positions overlooking the scene. Probably the whole cast will be brought together for an epilogue or some sort of finale. In this way each episode can be handled as a unit, with its own casting committee, costume and props committees, and its separate rehearsals. Perhaps all the episodes will not meet until a final rehearsal. The unit organizations will be under the supervision of the director and will usually be rehearsed by him, and they will also be in active touch with the costume chairman of the entire pageant. All the staging and set-



**SCENES FROM THE PAGEANT OF CHERRY VALLEY**
**At top—Singing the Flag Song**
**At bottom—The coach from Cooperstown on the new Cherry Valley Turnpike—1799**

tings, the lights and the large properties, will be taken care of by committees of the pageant as a whole.

### The Pageant of Jamestown

A pageant held in Jamestown, N. Y., in June, 1927, is a good illustration of this system of organization. The occasion was the centennial of the city's incorporation, and the pageant was a part of a week's celebration. It was written by a member of the high school teaching staff, who also did a good deal of the directing. Volunteers, experienced in such matters as electricity and architecture, were chairmen of committees on lights and stage effects. The five episodes, running about twenty minutes each, were cast from different city organizations, which were responsible, under the directors, for producing the best possible "acts." A professional director made two visits of about four days each early in May, during which she consulted with all chairmen, saw that the costuming and staging were started, and held rehearsals of all episodes. About two weeks before the performance, she arrived in Jamestown to stay till the end. The sale of seats for this pageant, at nominal prices, very largely covered expenses.

Some expenses are bound to be rather high, lighting, for istance (if your pageant is at night), but others can be kept down. Costumes, in particular, which will be a heavy item if everything is rented, need not be so severe a drain on the budget if volunteers will make them on the "workshop" system, and if some at least of the actors will make their own.

### The Pageant of Cherry Valley

These latter points were brought out in the Pageant of Cherry Valley, N. Y., held last summer as one of the series of pageants commemorating New York State's part in the Revolutionary War. Cherry Valley is a charming little old-fashioned village, of about 800 inhabitants. Its pageant cast was only about 100 strong, and some of these came from neighboring towns. In the matter of expenses it had the advantage of giving a daylight performance, seating its audience for the most part on a natural hillside, constructing its own scenery, and, as before said, making a good many of its own costumes, or adapting those borrowed from neighborhood attics. Only uniforms and some important men's costumes were rented. The director in this case was on the ground four weeks, organizing from the beginning.

The construction of this pageant, also locally written, was not episodic as in Jamestown, but more like a chronicle play, with the same actors appearing again and again. This fitted well a small cast, a fair degree of intimacy with the audience, and the subject-matter, the stirring events of colonial and Revolutionary history.

Those communities which have thrown themselves wholeheartedly into pageant production have found that the inevitable hard work turned out to be, after all, fun, and that thereby they discovered new avenues of expression, individually and collectively, and that "the time we worked together on the pageant" continues to be a bond between many whose lives might otherwise never have touched.

### Suggestions for Pageant Material

A pageant written expressly for the occasion is usually most satisfactory, because local tradition is the backbone of its civic value. If no one in the community cares to do it, the pageant director is usually very capable of writing the text from locally compiled data. However, there are many good pageants already in print which would be worth while doing if you prefer it so.

Community Drama Service, the Playground and Recreation Association of America, 315 Fourth Avenue, New York City, has arranged a list of pageants, masques, and festivals, together with books on pageantry and festivals, giving names, authors, prices, and publishers' addresses; price 15 cents. Among the subjects noted in the latter part is a list of music for plays and pageants. The music written for the Cherry Valley Pageant is suitable for almost any pageant of early American life, and the songs are tuneful and easy to sing. Copies of the music and permission to use it can be asked for from Abraham [illegible] Cox, Glensfoot Farm, Cherry Valley, New York. From the same address a copy of the text of the Pageant of Cherry Valley may be obtained, and the text of the Pageant of Jamestown could be inquired for from the Chamber of Commerce, Jamestown, N. Y. Community Drama Service has also for distribution a pageant budget, compiled by Elizabeth H. Hanley, giving approximate estimates on essential expenses for very small, medium, and very large pageants.

# "Hot Dog Kennels" as Nuisances to Adjoining Property Owners

*By* LESLIE CHILDS

IT goes without saying that there is nothing unlawful in the establishment and operation of a refreshment stand, or, in modern parlance, "hot dog kennel," within itself. However, it is equally well settled that, where an enterprise of this kind causes annoyance and discomfort to adjoining property owners, it may be declared a nuisance and abated as such. And, as example of the application of this rule, the following case may prove of interest and profit.

### A California Case

In Willson v. Edwards, a California case reported in 256 Pac. 239, the defendant established a refreshment stand on a corner in the city of Stockton. The location was in a residence section, and the plaintiff, whose premises were in close proximity, brought the instant action to abate the defendants' business as a nuisance. The trial court found, in substance, as follows:

That, at certain hours of each day, there were odors and smells from the defendants' stand that were offensive to plaintiff in his home; that the defendants' business was patronized by customers who arrived in automobiles, and made a great noise and commotion from 10 o'clock p. m. until 3 o'clock a. m., which materially interfered with the plaintiff in the quiet enjoyment of his premises.

On these facts, the trial court issued an injunction which required the defendants to abate the conditions complained of by the plaintiff. This injunction did not close the business, but it did require the defendants to operate in such a manner as to prevent the violation of plaintiff's rights, especially in respect to noise made by customers between the hours named. From this the defendants appealed, and the higher court in sustaining the judgment of the lower court, said:

"The findings of the court show that the defendants have seen fit to establish their business in a section of the city principally occupied by residences; that they have seen fit to conduct the business so that it creates unusual noises between the hours of 10 p.m. and 3 a.m. of the following day. . . . .

"The injunction permits the defendants to continue in business and to operate the same, provided it can be done in a manner that will not deprive the plaintiff of his legal rights. The whole injunction, so far as it relates to the noises, is based upon the loud, unusual, and disturbing character of the noises, and if the noises hereafter are neither loud nor unusual nor disturbing, such noises are not included within the terms of the injunction. . . . . The judgment of the trial court is affirmed."

### A New York Case

So much for the above case, and now let us turn to a decision involving some-

what similar facts which arose in New York. This case is titled Andrews v. Perry, is reported in 216 N.Y.S., and arose under the following facts:

The defendants were engaged in operating a one-story refreshment booth in the city of Syracuse. The plaintiffs occupied adjoining property, and brought the instant action for an injunction on the ground that the business constituted a nuisance. In passing upon the case, the Court reviewed the record as follows:

"The booth is too small to accommodate defendants' customers inside. They are compelled to stand outside, or retire to their cars, or to the surrounding lawns, to devour their purchases. The booth is kept open until midnight or later on warm summer evenings, and the evidence shows that many of the patrons overrun plaintiffs' property, trample down their grass, throw papers and refuse on their lawn and the surrounding property. . . . .

"The odor from the sausages which are cooked at the stand permeates the neighborhood, and is blown, whenever the wind is in the right direction, across plaintiffs' porch and into their house, to their discomfort and annoyance. The food attracts flies and insects, which do not confine their activities to the counter, but force their unwelcome presence on the plaintiffs. . . . ."

Following the above review of the evidence, the Court, in finding in favor of the plaintiffs, said in part:

"In this case, . . . I do not think that the defendants have any equity sufficient to warrant the Court in refusing to enjoin the further offensive operation of this stand. It is not a case where the defendants have invested a large amount of money in a manufacturing plant, which would be lost in the event that operation was prohibited.

"Defendants have put only a small amount of money in this plant. The building occupies but a small part of the lot. For their own personal gain they have invaded a strictly residential district with a business which is offensive to the entire neighborhood. . . . . There is no crying demand for a refreshment stand at this spot. There is another . . . . which can easily supply all the urgent needs of the public, and which is so far removed from any residence that it loses most of its objectionable features. . . . ."

### Conclusion

The foregoing cases constitute well-reasoned examples of circumstances under which the operation of refreshment or "hot dog" stands may be enjoined as nuisances to adjoining property owners. And, in the light of the facts and holdings of these cases, it is clear that the test of whether a business of this character constitutes a nuisance or not, will depend upon the degree of annoyance and discomfort it inflicts on the complaining parties.

It is obvious that each case of this kind must be decided upon the facts involved, and that the subject cannot be covered by the statement of any hard-and-fast rule. However, the cases reviewed make it plain that, where the operation of a refreshment stand is shown to materially interfere with the quiet enjoyment of adjoining property, it may be enjoined as a nuisance.

EDITORIAL NOTE.—In addition to the legal methods, discussed in the foregoing article, of abating "hot dog" stands under certain conditions as nuisances, consideration should be given to the possibility—already effective in many cities—of preventing through zoning ordinances, the erection of such stands and other types of business structures in residence districts.

# City Manager Advocates Cash Policy for All Except Large Capital Expenditures

DURING the last three years the little city of Two Rivers, Mich., with a population of 10,000 and an assessed valuation of slightly over $11,000,000, has spent more than $650,000 for capital outlay and has issued only $150,000 worth of bonds, the balance being paid out of funds derived by direct taxation. This fact was brought out by Richard Biehl, City Manager of Two Rivers, in an address on "Cash Policy for Municipal Improvements" before the annual convention of the American Society for Municipal Improvements, in Dallas, Texas, November, 1927. To quote in part:

"The city of Two Rivers a number of years ago adopted a 'pay-as-you-go' policy in the financing of ordinary improvements. A sufficient tax is levied each year to pay for the current paving program, the laying of all sewers and water extensions, street lighting, new equipment for all city departments, for playgrounds and for other improvements whose cost will be not more than $75,000. Bonds are issued with which to finance the construction of school buildings, bridges and other projects costing over $75,000. This policy has met with hearty approval from most of our citizens.

"Just recently the citizens of our city wanted a municipal hospital and they wanted to pay cash for this improvement. Instead of issuing bonds in the amount of some $200,000, a group of public-spirited citizens made a drive for about ten days and secured more than enough money to build the hospital, the donors to pay their subscription over a period of three years. The local banks agreed to advance the necessary funds until the subscriptions have been paid.

"A few years ago citizens in our city wanted a new high school. Plans were made and bids secured. It was found that the school would cost over $500,000. The School Board and Council, as well as the citizens, did not feel that they wanted to issue bonds for such a large amount. A tax was levied that would produce $100,000 a year for a period of two years. Bonds were then issued in the amount of $300,000. This issue of bonds was the city's only obligation until this year, when we issued a series of bonds in the amount of $150,000, the money to be used to construct a modern bascule bridge.

"How much better this plan is than the plan under which another city which I know of operates. The other city—there are many just like it—issued bonds to buy a fire engine that cost $6,000. At this writing the engine has been discarded, the city has paid $15,050 interest to date, and there still is due on the fire engine, in principal and interest, $8,250. If the bonds outstanding are paid when they fall due, it will mean that it will have cost the city $23,300 for a $6,000 fire engine. Those who enjoyed the use of the engine never paid for it. Is it any wonder taxes are high?

### $232,000 for an $80,000 Paving Job

"Another city with which I am familiar issued $80,000 worth of bonds to pave certain few streets within the city. Four years ago the city had paid $72,000 interest on the bond issue and the bonds were then due for payment, and the city being without money to pay off the issue the bonds were refunded for another twenty-year period at a higher rate of interest. If these bonds are paid at their maturity, it will have cost the city $232,000 for an $80,000 paving job. The unfortunate part is that most of this pavement has been worn out and additional bonds have been issued to repave these streets.

"Cities that are unable to operate on a cash basis should adopt a model bonding policy. In no case should bonds be issued for a period that will exceed the probable life of the improvement acquired. The best plan is to issue bonds serially, retiring a certain amount each year. Taxpayers throughout the United States are giving more and more attention to the subject of bond issues, and it would be well for every community to adopt a model bonding policy."

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### *An Ambitious Program for Teachers*

ONLY teachers aflame with enthusiastic love can volatilize the common water of our democracy. O for a hundred thousand of them right now, to develop in this generation the power necessary to beat our guns into farming tools, our monopolies into profit-sharing guilds, our rivalries into cooperative service; to destroy our slums, beautify our cities, banish graft, clean up our newspapers, develop the moving picture in the right direction, christianize our churches, bring in everlasting peace and the federation of the world!

—Henry Turner Bailey.

# Non-Bituminous Highway Materials and Their Uses—I

*By* A. T. GOLDBECK

DIRECTOR, BUREAU OF ENGINEERING, NATIONAL CRUSHED STONE ASSOCIATION

IT may be stated as a principle of economics of highway construction that:

*"No road should ever be improved to an extent in excess of its earning capacity. The return to the public in the form of economic transportation is the sole measure of the worth of such improvements."*

Adherence to this principle, the general truth of which seems unassailable, will very naturally lead to the building of all types of roads for which suitable materials are available. It is largely that principle which has resulted in so wide a diversification of road types in practically all parts of the world.

This discussion is devoted to the non-bituminous road materials and their principal uses. If we are to start at the beginning, we must first consider the most frequently used road material, namely, common earth, and work up through to the very highest and most traffic-resisting types of road surfaces.

### The Earth Road

The earth road in its lowliest form is nothing more than a trail, and no consideration whatever need be given to the type of earth encountered, for necessarily the very cheapness of the type precludes any possibility whatever of specifying the kind of earth to be used in its construction. One is forced to accept conditions as they are found. The same statement may be made with regard to earth roads which are built in many instances as one of the stages toward higher construction in years to come. I refer to the graded and drained earth roads built to carry the pavements of the future. So far as the material comprising earth is concerned, we must accept it and use it as we find it. None the less, a discussion of the characteristics of soil types may be of some value because, although the earth roads when used as such can not be altered economically until traffic warrants the construction upon them of some higher type, such roads ultimately will serve as the subgrade, and a discussion of the subsoil and its ability to support future highway surfaces is well worth while.

### Subsoil

For a number of years soil scientists have been studying the various kinds of subgrades, and of late years those interested in highway engineering have recognized the fact that the characteristics of the subgrade materials have much to do with the success or failure of a road surfacing. Soils are the result of rock disintegration, and as various rocks are composed of mineral constituents having a high range of resistance to disintegration and also having a wide variation in mineralogical composition, it is entirely logical that we should find the material resulting from such decomposition, the soil having in turn widely varying physical characteristics.

### Plastic Clays

All of us are familiar with the highly plastic clays, of which bentonite is an extreme example, composed of microscopic particles of a colloidal nature so finely divided that if stirred with water the finest portions will remain in suspension almost indefinitely. Such materials may be considered to be at the lowest end of the scale. They form the worst possible subgrade materials, for, because of their finely divided nature they have exceedingly high water-holding capacity and when they take up water they swell and vertical movement of the pavement results. When they dry out, they shrink again and the pavement moves vertically and oftentimes horizontally as well. Since the absorption and drying-out of moisture proceed in a non-uniform manner, the movements of the pavement are correspondingly non-uniform and cracking is frequently the result.

### Granular Materials

At the opposite end of the scale we have materials of a granular nature such as the sandy gravels containing a comparatively small percentage of fine binding material. These soils drain very readily and, moreover, change in volume inappreciably from an extremely wet to a dry condition. Between these extremes we have all grades of materials, each having its individual characteristics, which are now the subject of minute study in several highway laboratories. The science of soil physics as applied to road building is not in an advanced stage. Roughly speaking, however, I think I am safe in outlining the following physical characteristics of good and bad soils:

GOOD SOILS

a. Coarse, granular texture
b. Low moisture capacity
c. Non-plastic when wet
d. Easily drained
e. High bearing value
f. Low volume change

BAD SOILS

a. Extremely fine state of subdivision, as in clays
b. High moisture capacity
c. Extreme plasticity
d. Drain with difficulty
e. Low bearing value
f. High volume change

### Field Test for Soils

In the field, good soils may be roughly distinguished from bad soils by a simple test which has been called a "field determination for moisture equivalent." The test is made by determining the amount of moisture which it is necessary to add to the soil to bring it to about the consistency of putty. When a soil has had an amount of water added to it equal to its so-called "moisture equivalent," an additional drop of water on its surface will be absorbed only with difficulty and the surface will remain moist in appearance for a few moments. On the other hand, when the soil contains less moisture than its "moisture equivalent," a drop of water will be immediately absorbed. By this simple means it may

FIG. 1. SPREADING CLAY ON A SANDY ROAD

be determined how much water is required to mix with the sample to bring it up to its "moisture equivalent." When the amount of water thus required is over 30 per cent of the weight of the sample, such a soil is apt to give trouble, and when it is under 20 per cent there will be very little difficulty with the subgrade. The field between 20 and 30 per cent, in our present knowledge, had better be regarded as one of uncertainty. Observation of the behavior of different types of soils when used as earth roads has led to the development of a low class of road in which advantage is taken of the desirable characteristics of the best soil types. I refer to the top-soil, sand-clay and semi-gravel roads which are so largely used, particularly in some of our southern states and to some extent in the New England states.

### Top-Soil, Sand-Clay and Semi-Gravel Roads

It has been stated that a soil having good characteristics for use as a subgrade material is one which is of a coarse, granular nature, is easily drained, and has low capacity for the retention of moisture, and which, moreover, is not much affected in bearing value when moisture is present. It has been observed that the top-soil in fields which have been long under cultivation gradually assumes such properties as these, primarily because the finer material has gradually been washed away, leaving only the coarser and more resistant particles of soil. Where traffic is very light and other road materials are too expensive, it is the practice to make use of the top-soil from old, abandoned, local fields which have been under cultivation, depositing this material in a layer up to 12 inches thick on the old earth road and subjecting it to compaction. Such a surfacing, because of its granular nature, is much more resistant to the traffic than many types of subgrade materials, particularly those containing a large percentage of plastic clay, and, although dusty in dry weather, top-soil roads serve their purpose economically. Oftentimes such top-soil is not available but a suitable grade of coarse sand from some stream-bed may be obtained in the locality and may be mixed principally by the aid of traffic with the underlying material to form what is known as a sand-clay road. Frequently, also, a natural sand-clay mixture is available and is used in its natural state as a road-surfacing material. When such sand-clay contains a small amount of larger particles, it is known as semi-gravel. A great deal of investigational work has been done on roads constructed of such materials as these and it has been found that good results are obtained with natural mixtures having the following physical characteristics:

CLASSIFICATION OF SOIL MORTARS

| | Class A | Class B | Class C |
|---|---|---|---|
| Clay | 10-20 | 10-25 | 10-25 |
| Silt | 5-15 | 5-20 | 5-20 |
| Total sand | 65-80 | 60-80 | 55-80 |
| Sand above No. 60 sieve | 45-60 | 30-60 | 30-60 |
| | Hard | Medium | Soft |

The addition of coarser particles to any of the above soil mortars to the extent of 20 or 30 per cent adds greatly to

FIG. 2. TRAFFIC-BOUND SURFACE UNDER MAINTENANCE

their durability. In connection with the effect of wet weather on the above surfaces the following comments have been made. These comments, however, apply particularly to the southern part of the United States where freezing weather is the exception. In Canada the frost effect would unquestionably be very severe on roads of the sand-clay type.

### The Effect of Wet Weather

(a) Moderate ground moisture increases the strength of all classes of these roads.

(b) Long and heavy rains influence them as follows:

*Class A.*—Do not materially soften except where water stands for a long time in depressions. Wheel ruts rarely deeper than 1 inch. The slab below this surface mud is generally hard and firm and will require the heaviest road machines to re-shape the surface. Dries off readily and soon becomes too hard for the heaviest road machines to cut. Suitable up to 400 vehicles per day.

*Class B.*—Soften only after long and continued wet weather. Wheel ruts rarely as deep as 2 inches; not much washing into side ditches. Easily repaired with road machines. Dry out promptly and are usually too hard for any but the heaviest metal drags and light road machines.

*Class C.*—Soften the surface so that wheel ruts 2 or more inches deep may appear under heavy vehicles, and when the sand is fine, considerable material is washed down the steeper grades and into the side ditches. They do not show deep mud and are not slippery. Repairs are readily made with drags and road machines.

In the construction of roads of this type, a depth of treatment of 6 to 12 inches is used, spread over a minimum width of 18 feet and preferably wider with a crown of ¼ inch per foot. The greater the width the wider becomes the spread of traffic and consequently the less will be the wear. It has been found that with a traffic amounting to 400 to 600 vehicles per day there is loss of material at the rate of ½ to 1 inch per year and that, in general, it is not economical to maintain these roads under a traffic in excess of 400 vehicles per day.

### "Traffic-Bound" Construction

A type of road which has become exceedingly popular with many highway departments is the so-called "traffic-bound" road. In this method of construction the subgrade should first be shaped to proper grade and alignment and the necessary drainage structures should be placed, and the line and grade should be adhered to which later will be suitable for a high type of surface carrying high-speed traffic. The method of construction consists merely in applying crushed stone or crushed gravel to the subgrade to the extent of 500 to 1,000 tons per mile. Screened gravel has also been used, but according to the investigations made by the Ohio State Highway Department it has been found that at least 40 per cent of crushed material should be used. The crushed stone or gravel after being applied is dragged to the sides of the road so that a thin layer only remains on the subgrade. Traffic is then turned on the road, and a blade grader is kept continuously at work, gradually dragging in more material from the sides as the need for it develops and always keeping a comparatively thin layer of loose material on the surface.

The stone for this purpose should preferably be one inch and smaller, extending down to about the No. 10 sieve but without any dust. It should not be too soft so that it will break excessively under traffic, nor should it contain material such as clay which will tend to bind it together tightly on the road surface. There is one very great advantage in roads of this type, namely, with little initial expenditure they give the traveling public hundreds of miles of highways which may be traveled at high speed,

whereas a road program calling for the immediate construction of high types would keep the traffic in the mud for many years, awaiting the construction of first-class roads. There is still another advantage in that the earth road so treated becomes an excellent subgrade for the support of a higher type of surface when the demands of traffic require that such a surface be built. All the soft spots are sought out by traffic and are automatically repaired in the maintenance operation. In time, the traffic-bound road becomes of uniform load-bearing capacity, a condition most desirable for the support of any highway surface.

It is remarkable what may be accomplished on any type of subgrade material, varying from the most plastic to the cleanest sandy soils which will not bear traffic when dry, merely by laying upon them a rather thin layer of small-size angular material having particles extending up to ½ or 1 inch in size. Frequently, traffic-bound construction has been built with material above 1 inch in diameter and not sufficient care has been taken to keep the loose portion of the surface as thin as possible. Both of these points are objectionable, for the large, loose stone unquestionably causes more rapid tire wear, which may be avoided when smaller material is used, and, moreover, a thick layer of loose material is dangerous. Both of these defects are inexcusable and may be avoided. Stone having a percentage of wear of not more than 7 should be suitable for roads of this type.

### Macadam and Gravel Roads

The waterbound macadam type of construction was developed in the days of steel-tired traffic and it stands up under our present-day rubber-tired traffic only when given a bituminous treatment of some kind designed to protect the wearing surface from raveling. America's first macadam was built in 1818, extending from Cumberland, Md., to Wheeling, W. Va. It is said to have been built 40 feet wide so that "fast mail coaches at 10 miles per hour went by the slow wagons without interference." The waterbound macadam can, of course, be maintained in the same manner as traffic-bound roads by the use of small stone dragged continuously over the surface, but it would seem to be uneconomical to build a waterbound macadam to be maintained in this way. When built, however, as a waterbound macadam and considered temporarily as such until a more durable surface is provided, which may consist of a surface treatment or of one of several types of bituminous treatments later to be described, it forms an excellent base, well suited for carrying present-day traffic.

The size of stone ordinarily used for this purpose depends to a considerable extent upon the softness of the rock. Where the rock is very soft, coarse stone ordinarily ranges from 2½ to 3½ or 4 inches in diameter, and where the harder varieties are used, 1¼ to 2½ inches is about the correct size. In quality the rock may have as high as 8 per cent wear for the base course but not more than 6 per cent wear for the top course, which is subjected directly to the wear of traffic. Screenings can range in size up to ¾-inch in maximum diameter. In construction, the road is built in two courses, ordinarily a 4-inch thickness for the base course and 3 inches for the top course, although this practice is varied considerably. The total thickness will depend to a very considerable extent upon the subgrade and traffic conditions, and it may be necessary to provide a subbase either of hand-placed stone or of bank gravel extending in depth up to 18 inches. Under the present-day traffic conditions a crown of 3 inches for an 18-foot road is ample. The construction of water-bound macadam is so well known, there is little use in discussing its details.

### Gravel Road Construction

There are many miles of road in which gravel is used for construction, primarily because it exists locally, and, further, because the traffic is not sufficient to warrant a road of a higher type. Such roads are serving their purpose and are economic so long as the traffic does not run over 600 or 700 vehicles per day. The materials used in the construction of the gravel road are not ordinarily very carefully selected, but the best results are obtained when care is exercised to so grade the material and so select it that it has certain desirable properties. Gravel for this purpose should be composed of hard, durable stone particles having high abrasion resistance, and it should have a specified amount of clay or other binding material and also of sand. The following detail requirements for gravel for road construction have been found to give good results:

1. Sand-clay gravel for use or size designated shall meet the following requirements:

| (a) Base Course Gravel, 0 to 3-inch size: | Per Cent |
|---|---|
| Clay and silt | 5 to 15 |
| Passing No. 8 sieve | 15 to 40 |
| Passing 3-inch screen | 100 |
| (1) Cementing value of materials passing No. 8 sieve not less than | 50 |

| (b) Surface Course Gravel, 0 to 1-inch size: | Per Cent |
|---|---|
| Clay and silt | 5 to 15 |
| Passing No. 8 sieve | 15 to 40 |
| Passing 1-inch screen | 100 |
| (1) Cementing value of material passing No. 8 sieve not less than | 50 |

2. Sand gravel for use or size designated shall meet the following requirements:

| (a) Base Course Gravel, 0 to 3-inch size: | Per Cent |
|---|---|
| Clay and silt | 0 to 5 |
| Passing No. 8 sieve | 15 to 40 |
| Passing 3-inch screen | 100 |

| (b) Surface Course Gravel, 0 to 1-inch size: | Per Cent |
|---|---|
| Clay and silt | 0 to 5 |
| Passing No. 8 sieve | 15 to 40 |
| Passing 1-inch screen | 100 |

FIG. 3. RE-TREAD CONSTRUCTION, SHOWING THE BLADING OF THE STONE AFTER THE APPLICATION OF THE BITUMINOUS BINDER

3. Maintenance gravel, ¼- to ¾-inch size, shall meet the following requirements:

| | Per Cent |
|---|---|
| Passing ¼-inch screen | 0 to 15 |
| Passing ¾-inch screen | 95 to 100 |

It will be noted that the gravel in the surface course has a maximum size of 1 inch, while the base course gravel is allowed to extend up to 3 inches. The underlying idea here is that very much smoother roads may be obtained by the

use of the smaller-size gravel. The construction of gravel roads using material of the above size will be much like that of a macadam, the road being built in courses and rolled to compaction, the bottom course being 4 to 6 inches in thickness, and the top course 3 or 4 inches in thickness with a comparatively flat crown.

Such gravel roads are maintained best by the use of clean small-size gravel, bladed continuously over the surface, thus maintaining a loose mulch, which, however, should be of a thickness preferably not to exceed ½-inch. Maintenance of this character will keep the surface free of chatter-bumps and is economical for a traffic not exceeding 500 or 600 vehicles per day. There is one difficulty with the maintenance of both gravel and crushed stone roads with the use of a drag, namely, the fact that there is a considerable loss of material during the course of a year, due in part to its being knocked off the road under the action of passing traffic, in part to its being ground up, blown and washed away. It is estimated that such losses may amount to as much as 1 inch per year when the traffic reaches 500 vehicles per day. Such loss of material is serious and leads to high maintenance expense. When the traffic is low, however, the traffic-bound, gravel and crushed stone roads serve a very useful purpose in that they permit of the opening of large mileages of highways and thus facilitate the economic development of large areas of country which otherwise would be without highway transportation. With the traffic-bound method of construction certain states have made remarkable strides within but a few years' time, and on those sections for which traffic-bound roads are shown to be inadequate, higher types are then laid as they are needed.

### Surface Treatments for Waterbound Macadam

There is one modification which has been developed in recent years in the construction of a waterbound macadam surface, namely, the use of screenings to only partially fill the voids in the wearing surface, then the completion of the surface with the use of tar which penetrates into the unfilled portion of the stone. The result is a surface which is considerably better than a surface-treated macadam and not so good as a straight bituminous macadam. Possibly a cut-back asphalt could be used in the same way as tar. Roads thus treated have a high traffic capacity, especially for the lighter vehicles, a capacity up to several thousand vehicles per day. The use of asphaltic oils and tars for the surface treatment of macadam is also a well-known maintenance method, and the type of non-bituminous material used in connection with this method, as a rule, consists of crushed stone or gravel, the maximum size of which is largely dependent upon the consistency of the bituminous material used. A heavy material requires the use of a large-size screening; light material, the use of small size; the heavy material combined with the large screenings necessarily building up a thicker mat than the lighter treatment. Broken stone, because of its angularity and uniformly high resistance, is ordinarily used for heavy treatments, and broken stone or gravel for the lighter treatments. For the heavier treatments the broken stone is used in the commercial size designated as ¼- to ¾-inch material.

The following is a good specification:

| | Per Cent |
|---|---|
| Passing ¼-inch | 0 to 15 |
| Passing ½-inch | 25 to 75 |
| Passing ¾-inch | 95 to 100 |
| Passing 1-inch | 100 |

Stone for this purpose should be clean, hard, tough, durable and free from soft particles. Of the ¼- to ½-inch stone or gravel used for the lighter treatments, 15 per cent may pass a ¼-inch screen and at least 95 per cent should pass the ½-inch screen. A surface treatment provides a comparatively thin mat on the top of a macadam road, and, although such a mat is very efficient in preventing any dust from forming and in keeping the surface from raveling under the action of traffic, it does not have the wearing properties which would exist if the mat were of greater thickness. For this reason efforts are being devoted continuously to the development of bituminous-bound surfaces not so expensive as bituminous concrete or bituminous macadam, but of higher resistance than a surface treatment. Such a surface is the so-called "re-tread" surface which has been under observation for several years.

### "Re-Tread" Surfacing

In the "re-tread" method of construction the base may consist of an old worn-out macadam, gravel or traffic-bound road which is no longer economical to maintain as such, but which is adequate to carry the weight of traffic. If it is exceedingly rough, it may be desirable to harrow it to not too great a depth so as not to disturb the stone clear down to the subgrade. The road may then be shaped and rolled. If, on the other hand, there are purely local roughnesses and pot-holes, these may be repaired by the addition of extra stone or the road may be kept maintained as a traffic-bound road and dragged continuously so that a smooth, well-compacted base will result. The "re-tread" surfacing is then laid upon the base, treated in any of the above ways. First, there is spread upon the base a layer of stone which may be known commercially as ¾- to 1¼-inch size. The exact grading of such a stone may be as follows:

| | Per Cent |
|---|---|
| Passing ¾-inch | 0 to 15 |
| Passing 1 -inch | 25 to 75 |
| Passing 1¼-inch | 95 to 100 |
| Passing 1½-inch | 100 |

This stone is spread to a depth of 2 inches, loose measurement, and it is then preferably dragged and rolled lightly or merely dragged to give it a proper cross-section. It is then treated with ½- to ¾-gallon of the proper grade of tar or cut-back asphalt, after which it is immediately dragged and rolled, and the rolling is continued for several days. If traffic is allowed to operate during construction, the dragging should be continued in order to maintain the correct cross-section, and the rolling may or may not be given. It is preferable, however, to keep the traffic off and both drag and roll the surfacing. Finally, when the bitumen so stiffens that the stone tends to ball up in front of the drag, the dragging must be stopped and the surface rolled. It is then given an additional treatment of ¼-gallon per square yard, followed with stone chips. The surface is again thoroughly rolled. Such a surface may be constructed at an average cost of 40 to 45 cents per square yard, and when properly built by the use of a drag it has riding qualities which rival those of the highest type of pavement. It is to be regarded as of a type intermediate between a surface-treated macadam and a bituminous macadam surface. Its traffic capacity has not been determined, but it very nearly approaches that of a bituminous macadam, especially when few heavy trucks are used. It is giving every promise of being very successful and seems to furnish an excellent way of preserving the investment already made in old bases. The quality of stone for "re-tread" construction should be about the same as that for bituminous macadam, for which the percentage of wear in the Deval abrasion test should preferably not exceed 6 per cent.

*(To be continued in March)*

## *Dental Work for German School Children*

Of 92 German cities having populations of more than 50,000, a total of 50 are maintaining dental clinics for school children, according to a recent statement by the United States Children's Bureau, while in the other cities free examinations and treatment are provided at university clinics, by private dentists employed by the municipality or through sickness-insurance funds. In at least 28 cities the service is extended to the compulsory continuation schools. The municipalities meet almost the entire cost of the service, though some collect a small fee from the patients.

# FORWARD STEPS

*Reported by*

**Municipal Officials, Chamber of Commerce Executives, and Others**

## *County Zoning Under Way in Wisconsin*

MILWAUKEE, WIS.—A county zoning ordinance has been passed, under Section 59.97 of the Wisconsin statutes of 1927, by the Board of Supervisors of Milwaukee County, which is believed to be the first of its type in the United States. Paragraph 1 of the Wisconsin Enabling Act reads:

"The county board of any county may by ordinance regulate and restrict the location of trades and industries, and the location of buildings designed for specific uses, and establish districts of such number, shape and area, outside the limits of incorporated villages and cities, as such county board may deem best suited to carry out the purposes of this section. For each such district, regulations may be imposed designating the trades or industries that shall be included or subjected to special regulations and designating the uses for which buildings may not be erected or altered, provided, however, that the said county board shall, before it adopts such ordinance or ordinances, submit the same to the town board or town boards of the town or towns in which may be situated any lands affected by such ordinance, and thereupon obtain the approval of said town board or town boards, so far as the same affects the lands in such town or towns and in like manner any and all ordinances which may amend any ordinance, which may have been adopted as herein approved, shall be submitted to the said town boards and their approval obtained before the same shall be adopted by the county board. Such ordinance or amendments thereto may be adopted as to such town or towns which shall have given their approval thereto."

Under the law the preparation of the ordinance and maps is a responsibility of the county park commission acting as a rural planning board, but before becoming effective it must be approved by the local town boards of the communities which wish to come under the protection of the law. Following such approval, the county board may adopt the ordinance and it shall then become effective in such towns as have given their approval. Five of the seven towns in Milwaukee County have already given their approval to the ordinance as drafted and the other two, which are almost entirely rural in character at the present time, have indicated that later ratification is likely.

When residents of the various towns were given an opportunity to voice their sentiment through public hearings—attended by as many as three hundred people at a single session—in only one town was there any pronounced opposition to the adoption of the ordinance.

Before designating whether land would be devoted to industry, trade, or residences, a survey was conducted to find out the present use of land and buildings within the county; the location of areas already well defined as residential, commercial or industrial; zoned districts within the limits of cities and villages; main highways; street and interurban lines; topography of the land and other special features which might have a bearing upon the use of the land; the population, past, present, and probable future; the relations of the various districts to parks and other public or semi-public lands or institutions.

In dividing the land into use districts, the zoning ordinances of the seven municipalities within the county were taken into account, and the plan of the county was tied up to the plans of the cities and villages. For instance, business streets in the cities which continued into the country were often retained as business streets for some distance beyond the limits of the city.

From the maps which summarized the results of the survey, the land was divided into the following use districts:

"A" residence districts
"B" residence districts
Local business districts
Agricultural districts
Commercial and light manufacturing districts
Heavy industrial districts
Unrestricted districts

In classifying the various districts, it was found that the creation of local business areas was the most difficult, on account of the clamor for the maximum amount of business frontage.

Some advocated retail business districts continuously on every main highway. Others insisted that the business sections be located only at convenient central points, on the theory that concentrated business districts are preferable to the so-called "shoe-string" type which invariably became districts devoted partly to business and partly to residential uses.

To determine which was the better plan, a survey was conducted in three Milwaukee districts and three suburban districts, with a total population of 228,000. One of the districts was a new development with a moderate class of homes. Another was a high-class residential district. Still another was a congested residential district. There were also included two industrial areas and one distinctly suburban residential area. It was found that the average business frontage required for all districts was 52 linear feet per 100 residents. This survey of local business requirements checked very closely with the one conducted by the Chicago Regional Planning Association, which found an average of approximately 50 linear feet per 100 residents in a survey covering 28 cities and villages in the Chicago region.*

In the survey conducted locally, it was found that business requirements varied somewhat, depending upon the character of the area considered. For instance, it was found that in the average residential district 35 to 50 linear feet of local business per 100 residents sufficed, while in an industrial district 60 to 70 linear feet per 100 residents were required. Further study brought out two apparent reasons for this variation. First, those people living in a purely residential area seem to depend more upon the downtown or central business district stores for their purchasing, while those living in industrial districts buy more locally. Second, a great many of the inhabitants of the residential district work in the industrial district and this seems to result in a greater demand for restaurants, tobacco stores, and soft drink establishments in the industrial district than in the residential district.

It was decided, therefore, that as far as possible, the business districts should be located at those points of concentration offering the greatest convenience to the district upon which they are dependent for existence. In the plan for a local business district at the intersection of two main highways, a segregated parking space in front of the abutting stores is sometimes provided. (See next page.)

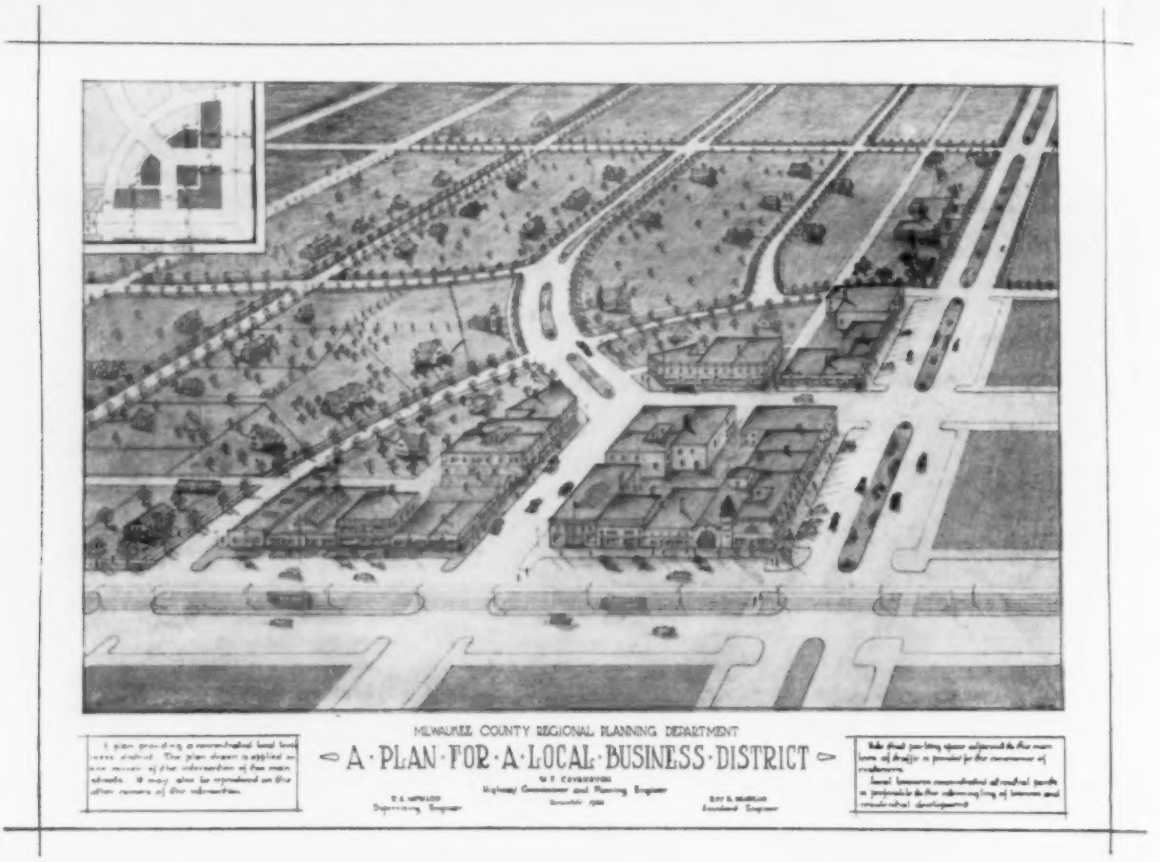
The creation of an agricultural district under zoning does not mean that this district will be limited to agricultural usage, and should not be confused with the policy of city planners in attempting to establish permanent agricultural belts around or surrounding city development. The agricultural district is made up of lands from which industry will be permanently prohibited and which will continue in agricultural usage until the proper time comes for development as urban residential areas, and when this time does arrive the local business areas required to serve the district will be created and the rest of the land zoned for residential purposes.

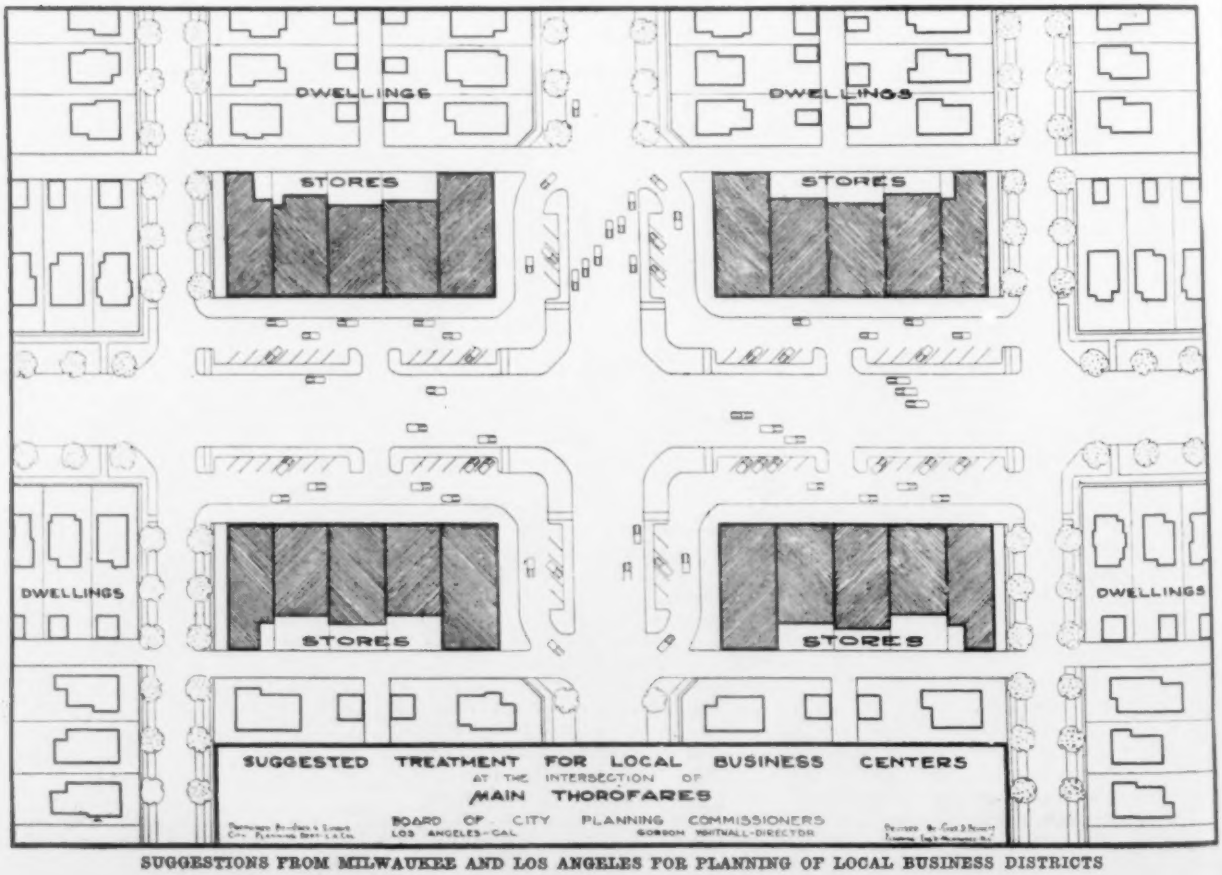
In the studies which preceded the adoption of the ordinance, cooperation was given by the individual town boards and by the Milwaukee Real Estate Board. The making of the necessary studies and the drafting of the ordinance was done by the Regional Planning Department of the county, of which W. F. Cavanaugh, Highway Commissioner, is the Planning Engineer; E. A. Howard, Supervising Engineer; and R. E. Behrens, Assistant Engineer.

A copy of the ordinance can be secured by any reader of THE AMERICAN CITY on application to the Regional Planning Department, County Court House Annex No. 2, 119 Biddle St., Milwaukee.

E. A. HOWARD,
Supervising Engineer.

*See THE AMERICAN CITY for September, 1927, page 335.




SUGGESTIONS FROM MILWAUKEE AND LOS ANGELES FOR PLANNING OF LOCAL BUSINESS DISTRICTS

### *New Memorial Auditorium Will Embody Most Scientific Ideas in Equipment and Facilities*

SHREVEPORT, LA.—The new Memorial Auditorium to be erected here at a cost of $500,000, will represent a fine example of the modern monumental type of American public building, and will embody the most scientific ideas in equipment and facilities. The exterior, which is to be 260 feet in length and 180 feet in width, will be of pressed brick sparingly trimmed with stone. It achieves its distinction through simplicity of line and dignity of proportion.

The principal problem of the architects, Messrs. Jones, Olschner, and Weiner, with Mr. Seymour Van Os, associate, was that of achieving the greatest possible seating capacity for what was to be at once Shreveport's largest auditorium and her official convention hall. Adoption of the arena type floor plan will provide a seating capacity of nearly 5,000, with unobstructed vision from every seat, there being no columns or similar obstructions of view. Special attention has been paid to the acoustics of the great room, where the latest principles advocated by acoustical engineers will be introduced to eliminate all echo. The walls, also, will be completely soundproofed; and regular convention-hall amplifiers will be installed for the benefit of those farthest from the speakers at vast gatherings.

The roof, which will have a span of 160 feet, will be supported by trusses, save for the support of the walls behind the side-seat sections. The level floor space will be of polished maple. Both architects and city councilmen have given particular thought to the adaptability of this floor space tor the widest range of uses, including theatrical and operatic performances and concerts, basketball tournaments, and indoor athletic events, Mardi Gras festivals, and civic gatherings.

The interior, like the exterior, is characterized by a dignified simplicity. A spacious foyer opens wide into a horseshoe corridor which encircles the auditorium proper. Here an added feature of convenience has been added in the doors which open directly into the aisles between seat rows. On one side of the corridor is a checking room, and on the other, several committee rooms, all designed to be used as exhibit space during big conventions and industrial shows. The basement will provide additional exhibit space.

Stairways will lead from the main foyer to the second-floor assembly hall, which will seat more than 400 and is designed for American Legion meetings and similar uses. This floor will also house several large committee rooms, and the remainder of its space will be given over to the balcony.

The stage, designed according to the most exacting specifications of the Opera Association, will have a depth of 40 feet and a length of 100 feet. Dressing-rooms will provide facilities for 160 people. Provision is also made for about 90 musicians in the pit. The curtains and stage sets will be of asbestos, and there will be a motion-picture booth, 40 feet long.

MARY VIRGINIA SAUNDERS,
Editor, *Shreveport Magazine.*

### *Egyptian Fire Fighters' Association Guards Southern Illinois*

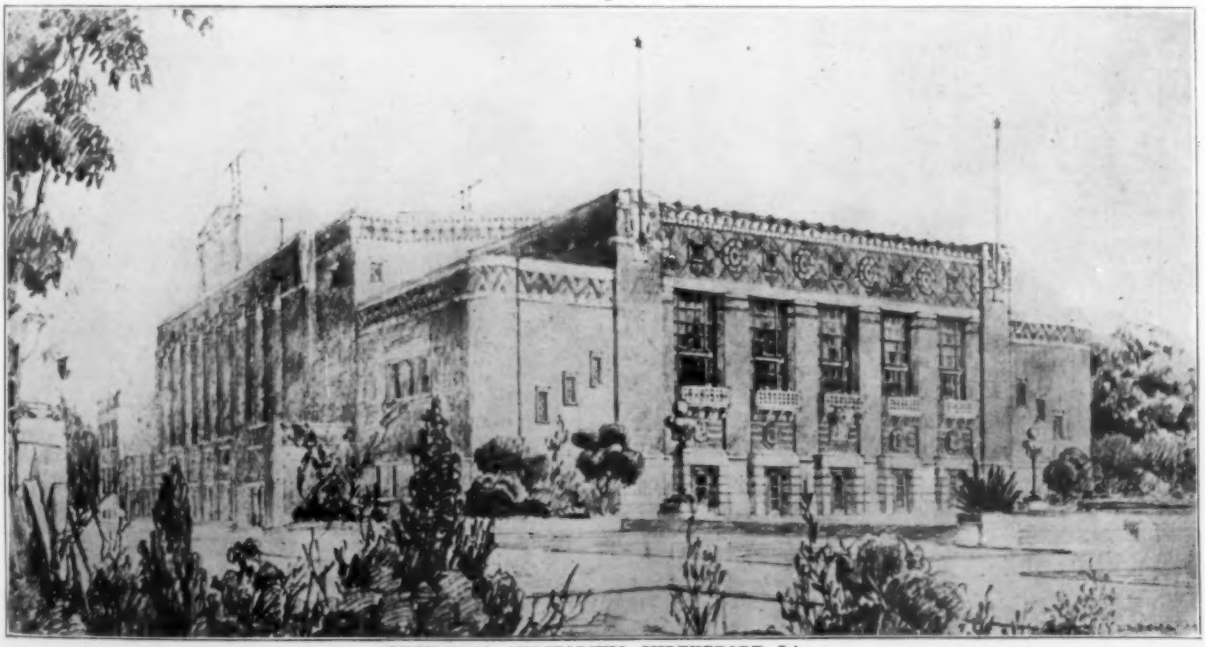
FLORA, ILL.—An organization of 48 towns in the southern part of Illinois now provides cooperation among the various fire departments. It has grown from 14 towns in 1925, organized as the Egyptian Fire Fighters' Association at a meeting of fire chiefs from this part of the state, after the Murphysboro cyclone. A leading object of the organization is the standardization of hose couplings and other equipment, so that when we are called to assist another department all our equipment can be of use.

We have worked in conjunction with the State Fire Marshal's office and the Bureau of Inspection, in Chicago, in the standardization of couplings.

We have in our fire calls down here a running-board or schedule of the towns that should be called first by each town in the Association, and the towns that should back up a town whose department is called out to assist another town. As an example, when we had a bad fire in Fairfield, the departments from Mt. Vernon, Mt. Carmel and Albion arrived as quickly as possible. Immediately after the Mt. Vernon department left town, they called Benton, and no sooner did Benton get the call than they had to respond to an alarm in Mt. Vernon. The schedule is worked out by a committee, having regard to the equipment in the various towns. Each town also has a list of the equipment of its neighbors.

We have so impressed the citizens of our communities with the importance of this work that the city officials are taking a hand in our work and attending our meetings. The Chief of Mt. Vernon, just as soon as he received the call from Fairfield, said, "What shall I do?" and the Mayor said, "Go at once." The Mayors of the southern Illinois cities who have attended our meetings have given their departments full authority to take the equipment at any time to go and assist their neighbors. This service is absolutely free to members of the Association.

The larger cities of the north have the advantage of ample equipment, but in the smaller towns, mostly with volunteer fire departments, we have only a limited amount. With this organization, however, we have at our command all the fire equipment necessary within a radius of 25 miles, and none of our towns, backed as



MUNICIPAL AUDITORIUM, SHREVEPORT, LA.
**Designed especially as a convention hall, this has a seating capacity of nearly 5,000. It is equipped for a wide variety of uses**

they are by the other departments, are left unprotected.

We are proud of our Egyptian Fire Fighters' Association. We meet every month during the summer, and there are always two, three or four towns bidding against one another for the meeting. We hold a business meeting in the morning and a public meeting in the afternoon. We have speakers who tell of the needs of their departments and of the things that the Egyptian Fire Fighters are doing to assist one another. The local department is greatly benefited, and after the citizens see the results that they never dreamed of before, it is much easier for the Chief of get the equipment that he needs.

We have called this the Egyptian Fire Fighters' Association because it takes in the territory south of the Baltimore & Ohio Railroad, commonly known as Egypt of southern Illinois. It is very easy to get from one town to another within the 25-mile radius. We cooperate with the Illinois Firemen's Association and require our members to be members of the latter also.

O. C. FORSMAN,
Secretary, Egyptian Fire Fighters' Association.

## *Tags Warn Motorists Off Landscaped Parkways*

SEATTLE, WASH.—That a parking strip, designed as a part of a general beautification scheme, will fail in effectiveness if confused in the public mind with a free

Help to Make
BALLARD
the most beautiful section of Seattle
Keep Your Car Off of the Parking Strip
It destroys the grass
It is against the law
It is not fair to your neighbor
BALLARD COMMERCIAL CLUB
SUNSET HILL IMPROVEMENT CLUB
WHITTIER HEIGHTS IMPT. CLUB
OLYMPIC HEIGHTS IMPT. CLUB
Tear Off This Strip
Fill In and Give To Secretary
Car No. Wn. _____
Date _____
Sign _____

parking space, was the conclusion arrived at recently by the Ballard Commercial Club, of Seattle. Having been arrived at, it was acted upon by this organization with the cooperation of the Sunset Hill Improvement Club, the Whittier Heights Improvement Club, and the Olympic Heights Improvement Club. An active "tagging" campaign was initiated as a measure of preventing automobiles from being driven onto the carefully landscaped strips, or "parking" strips, as they are called, of which some of the most beautiful sections of the city are so justly proud.

**A PORTION OF 34TH STREET NORTHWEST, ON SUNSET HILL, IN THE BALLARD SECTION OF SEATTLE, WASH.**
**This shows one of the improved streets, the "parking strips" of which are an object of civic pride**

The intent of the tag, of which a reproduction is shown herewith, was to act as a pleasant reminder to drivers; and up to the present time the system is working more successfully even than was anticipated, though it is somewhat difficult to find brave souls who are enthusiastic over walking up and attaching the tags to offending automobiles. Eighty-eight cars have been tagged, thus far, and of these, only seven have been second-time offenders. In these cases, the police, who have cooperated in the campaign, have been notified, have obtained the names of car owners, and have warned them that fines will follow further offenses. No one has had to be fined, and all who have been spoken to on the subject have entered enthusiastically into the spirit of the movement.

The writer was chairman of the Beautification Committee of the Ballard Commercial Club at the inception of the plan. At this time he is chairman of a corresponding committee of the Sunset Hill Improvement Club, and a member of the Parks and Boulevards Committee of the Seattle Planning Commission, while T. W. Hauff has replaced him in the former organization.

H. D. COALE.

## *Home Grounds Contest Brings General Beautification*

ALBION, MICH.—The Chamber of Commerce Home Grounds Improvement Contest, for reasons of brevity known as the H. G. I. C. of Albion, has been held for four successive summers, with great expansion every summer, and with a gradual development into a broader and more general beautification scheme than was originally planned.

Initially, the community was divided into eleven districts, with a committee of five appointed in each district, their first duty being to make a house-to-house canvass for contest members. Committees were also expected to find out from homeowners any conditions peculiar to their districts corrections of which would improve the appearance of the section. Some valuable suggestions were received, and, in most cases, little effort was required to remove unsightly obstructions.

Much consideration was given to the matter of entrance charges to contestants. A decision was finally reached whereby a charge of 25 cents was made, and four years of experience have shown this to be satisfactory. After the first complete canvass had been completed, reports were made to the general office, where next steps were planned. It was found that local committees gave splendid accounts of their efforts, all committeemen having been home-owners themselves and having all entered enthusiastically into their duties.

The home grounds of each entrant were judged before any particular improvement was started. This was done early in the spring and on the following basis:

*Lawns,* 25 *per cent.*—Points judged were: uniformity of turf; freedom from weeds; general appearance.

*Planning of shrubbery,* 35 *per cent.*—Points judged were: general condition of shrubbery; its location, general scheme of planting, and care given it.

*General,* 40 *per cent.*—On this score general harmony of grounds with the home and with other buildings on the property, were judged; and their composition as a whole.

This scheme has been adhered to annually. When the judges make their spring visits, a score is given on the condition of grounds at that time. After the judging, cards are returned to our office, where they are kept till the middle of September, when the same judges make another canvass of the entrants, at that time scoring the percentages of improvement made during the year. A first and a second prize are awarded in each district, and a first, second, and third grand prize to members making the greatest improvements in the city. Grand prizes awarded

## HOME GROUNDS IMPROVEMENT CONTEST

Albion Chamber of Commerce
1927

Name ..... Address .....

| Lawn Maximum 25% | Score | Plan and Shrubbery Maximum 35% | Score | General Appearance Maximum 40% | Score |
|---|---|---|---|---|---|
| Uniformity of Turf, Smoothness and Grade ..... 5% | | Condition of Shrubbery ..... 10% | | Harmony with Buildings ..... 15% | |
| Thickness of Turf ..... 5% | | Location ..... 10% | | Composition as a whole ..... 25% | |
| Freedom from Weeds 5% | | General Plan (varieties where placed) ..... 5% | | | |
| General Maintenance ..... 10% | | Maintenance of Shrubbery ..... 10% | | Total Score..... | |
| Total Score..... | | Total Score..... | | Grand Total Score | |

SCORE CARD FOR HOME GROUNDS IMPROVEMENT CONTEST

in 1927 were: highest award, a pair of evergreen trees; second highest, a pair of Groodendorf rosebushes; third highest, fifty dozen Darwin tulips. District prizes were: first, one Grootendorf rosebush; second, two dozen Darwin tulips.

Several suggestions made regarding the removal of eyesores and general nuisances were followed, and the conditions corrected. The river-bed within the city limits called for attention. The City Council cooperated by having an ordinance drawn up and adopted forbidding the dumping of refuse into the river, and by appropriating money to clean up rubbish already so dumped. Tramp dogs, guilty, among other things, of digging up shrubs and grass, were dealt with in an equally effectual manner, through cooperation of county officials. A very offensive slaughter-house was also reported, and improved. A stretch of land along a principal street, which had become a general dumping-ground, was called to the attention of the general committee. As a result, the city was requested to designate this spot for the dumping of stones, brick, and waste material from building until it could be filled. This has been done, and a heavy surfacing of black dirt applied. The plot will be seeded in the spring.

Three hundred shrubs of twelve different varieties have been planted to border the race bank leading to our large city park—Victory Park, and at the end of the bank rustic steps and a bridge form the park entrance. Planting has been planned so that every fourth shrub will be in bloom at some time during the season.

JAMES J. GRACE,
Secretary, Albion Chamber of Commerce.

### *New Chinese Playground in San Francisco*

SAN FRANCISCO, CALIF.—It is a far cry from the City God of Peking ensconced in his Drum Towers to the Chinese playground on Sacramento Street in San Francisco. Before the playground was opened last year, the Chinese children were compelled to play in narrow streets and vacant lots. Many Chinese parents, afraid of the busy traffic and its dangers, preferred to keep their young ones indoors. This was cruel to the youngsters, as they have unusually long school hours. Each of them goes to one of the six language schools from 5:00 to 8:00 at night. But whenever they get a few moments time, they turn to the playground. When the children were let out between classes it was necessary for the teachers to look all over the streets for them. Now the teachers are anxious no more, because they know where to find them.

The new playground is not only a place for fun and merrymaking, but a beauty-spot as well, with the Oriental field house done in modern Chinese design inside and out. Wall draperies, teakwood furniture, lanterns and porcelains make the interior a mysterious bit of the Orient. For emergencies there is a first aid outfit. There are also showers, telephone booths, and a large living-room. There are big swings and little swings with gates to fasten-in those whose hands are too small to cling safely to big chains. There is a big slide that takes the breath away when the youngsters slide down it, and a smaller one for boys and girls not so venturesome. There are big sand-boxes, "teeter totters," and a giant stride. Beside these there are baseballs, footballs and other apparatus for games. Miss Libertha Vivell and Oliver Chang are the directors of girls' and boys' activities.

Early in the morning come the young mothers with their tiny youngsters. Crossing the upper level with its tennis court and baseball yard, they descend to the second level and make for the sand-box back of the field building. A little later in the morning nursery maids, employed in the apartment houses of California Street, wheel baby carriages containing their charges into the enclosure and make for the benches on the second level.

Soon there is school intermission. Bright children pour into the playground. The girls dash for the traveling rings, which for some reason are regarded as exclusive feminine property. Boys climb on the teeter-totters, fight around the swings and compare their prowess in various games of ball, which are held on the lowest—the third—level. Only two Oriental games are played. The board, with its announcements of baseball and tennis tournaments is eagerly scanned.

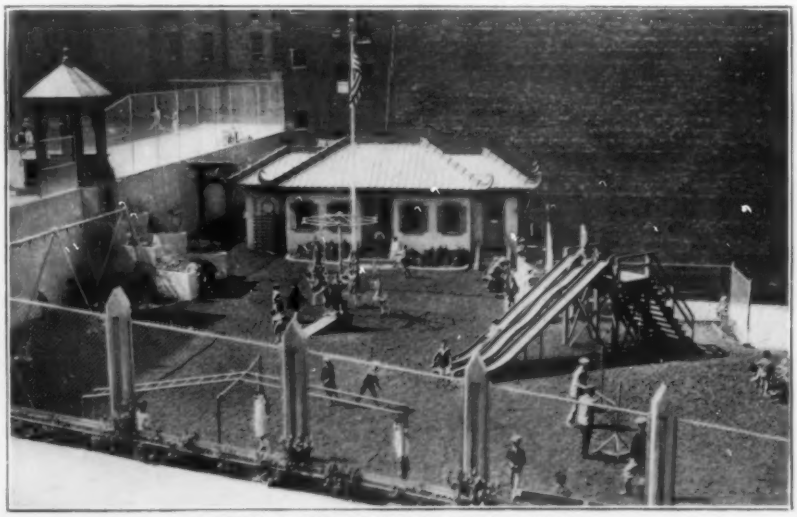
Oliver Chang, one of the directors of the playground, is a native son and a university graduate. He was assistant scoutmaster in Oakland in 1920, coached the Chinese Boys' Athletic Club in Berkeley, and has coached and refereed in basketball games since 1919. His father was in the diplomatic service of his country, stationed in Washington for years. Mrs. Chang, his mother, is a native Californian too, and has been active in Y. W. C. A. work for years. According to Chang, some 500 children come to the playgrounds on sunny days, while the total number of children being served is in the neighborhood of 2,000.

CHARLES W. GEIGER.

### *The Growing Urban Dominance*

WE need not apologize for large requests of men and money to carry forward the study of cities, for half our population is now urban, and the urban institutions and ideals are likely to be dominant in the next generation. America's cities will be increasingly influential in determining America's policies, in fixing the American standard of government

—CHARLES E. MERRIAM.



CHINESE PLAYGROUND IN SAN FRANCISCO
General view, with tennis courts at left

### *City and Federal Governments Cooperate in Creating Extensive Airport*

SAN DIEGO, CALIF.—The people of this city recently voted a $650,000 bond issue to construct the first unit of Lindbergh Field, its municipal airport. This unit will comprise 105 acres of municipally-owned property, which will be reclaimed from the bay by dredging 2½ million cubic yards, thereby providing additional acreage in the bay. The second unit of the field, embracing 182 acres of government-owned land, will be reclaimed by the War Department in the same manner. The total area of landing field, when completed, will be 287 acres and will adjoin the Marine Corps Base flying field.

While this will be a municipal field, administered by the Harbor Commission, the government considers it of sufficient military importance in time of war to construct the unit between the municipal land and the Marine Base, in order to give a complete runway of 2½ miles (including the Marine Corps flying field). Adjoining the airport will be 107 acres of property available for aircraft industry. Two height-limit zones surround the landing field.

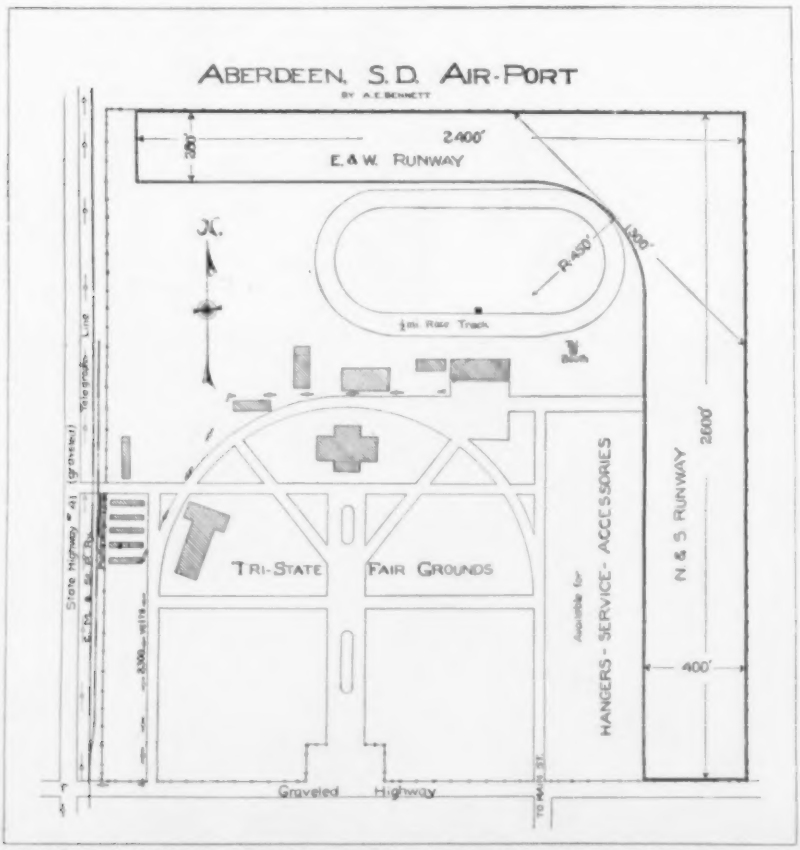
SAN DIEGO'S MUNICIPAL AIRPORT, AS IT WILL APPEAR WHEN COMPLETED

One of the great advantages of the airport will be the proximity to the heart of the city, situated as it will be only 1.4 miles from the main post office. Other transportation systems have been correlated with the airport in that the steamship, passenger terminal and Union depot are located on arterial streets which will bound the airport and will be less than a mile from the landing field. A transcontinental railroad parallels the airport only a block away, while a street-car line and bus line parallel it another block away. Three arterial boulevards bound the airport on three sides. Finally, the airport will have the unusual combination of affording facilities for both land and sea planes.

Situated on the water front, it can be reached by planes from almost any direction without necessistating the danger of flying over the highly congested section of the city.

The airport plans have been given an AAA rating by the Aeronautics Branch of the United States Department of Commerce, and were the first plans in the country to receive such a rating after the Air Commerce Act of 1926 was passed.

RUSSELL H. MILES,
Chamber of Commerce.




ABERDEEN'S AIRFIELD EXTENDS AROUND TWO SIDES OF THE TRI-STATE FAIR GROUNDS

### *Airport Located at Fair Grounds*

ABERDEEN, S. DAK.—The accompanying sketch shows the general layout and dimensions of the Aberdeen airport. The presence of the fair grounds makes facilities for communication and transportation available, as well as electric service, waterworks and sanitary conveniences. The telegraph lines shown west of the field are 20 feet from the ground, so that a rise of one foot in ten from the end of the field will clear them.

The soil varies from gumbo to clay loam. The field is well drained both by natural slope and by a ditch which carries the drainage around the outside of the field. No trouble with mud has been experienced. Two or three gentle swells in the contour enhance rather than detract from its landing and take-off qualities.

The location with reference to the city is excellent. It is on an extension of Main Street, 1½ miles from the C. M. & St. Paul R.R. station, and 1¾ miles from the U. S. Post Office, with the principal business district lying between the two.

Railroad lines coming into Aberdeen from all directions are great helps in guiding aviators to the city, where suitable markers lead them readily to the landing field.

A. E. BENNETT,
City Engineer.

# How Intensively Must We Use the Land?

*A Study of the Economics of Housing Development and Land Subdivision—Part IV*

By JOHN TAYLOR BOYD, JR.*

THE correct adjustment of the apartment house to street layout requires thorough scientific study. As explained in the previous articles, it is the cost of streets and utilities which makes even the lowest-priced land—that is, land bought at "acreage" prices—prohibitive for low-priced housing. Now, the garden apartment house can be built in groups on blocks of great depth so that residence streets can be spaced by much wider intervals than is necessary for the row and single-family types. This suggestion may sound revolutionary, but it is being discovered that great economy is gained by building apartment houses in groups. Large-scale operation is in accord with the trend of the times. In any case it is clear that subdivision for apartment house sites should differ from that of single-family or row-house types. This difference should be taken account of in planning public utilities—sewer, water, gas, electricity, etc.

These are the considerations which should govern the utilization of land for multi-family houses. The study of land values, we find, proves that the apartment on low site values can be required to carry as great unbuilt-on area as the less intensive types, and in many cases even more. Not only is there practically no financial hardship involved on the property owner, but he is likely to be the gainer thereby.

In city planning there is need of a more scientific method in dealing with the problem of the apartment house. This refers to building codes, zoning regulations and street layouts. In practice, the architect may, I think, justly complain of a slightly sentimental attitude on the part of the city planner and of the zoning expert towards the apartment house. Caught between the devil of the ignorant real estate speculator and the deep sea of the laudable ideal of the less intensive English type, the city planner too easily lends himself to action "against" the apartment house. Either that, or he leaves it to "stew in its own juice." I wish to point out that the way to stop the perpetuation of the existing average abominable type of apartment building is neither suppression nor indifference. What is needed is a higher standard. This policy of requiring higher standards, it is here suggested, would recognize the economic truth that the apartment house is such an efficient building that it alone can cope with the crushing financial burden of defective American practices in street layout, and in small-scale methods of construction. Only by improvement in our methods of producing housing can we hope to preserve the small house and to curtail the rapid growth of the apartment.

But until such improvement is made, it is fair to ask that the apartment be judged in its own merits and be brought under intelligent control. In its true character—the garden apartment covering from a tenth to a third of the site area—it has much to recommend it. The fine living conditions attained in even the lowest rental apartment groups built on $1 land and covering 30 per cent or less, have amazed experts. They present a picture of well-planned, attractive houses, flooded with sunlight and located in beautiful lawns and gardens. As the illustrations of the apartment group show, they have been compared to a college campus with dormitories, a type of housing which has always been considered ideal. Even more, where the proper percentage of site coverage is required, a real check is placed on the excessive land inflation which otherwise occurs in residence neighborhoods. Where site coverages of 50, 60, 70 per cent or higher are permitted, as at present, the disproportion between values per square foot of apartment house sites and sites of other housing types is so great as to be a constant threat to the security of single-family neighborhoods. It places too great a strain on use zoning, by inviting attempts to change the use from single-family to apartment house, impelled by the prospect of rich profits to the speculator and big increases in ratables to the municipality—whose officials often do not realize the increased municipal expenditures which usually accompany increased ratables.

One may urge also that in use zoning or site planning multi-family houses receive full consideration. Sometimes one sees town and city plans in which the apartment houses have been given an undesirably located district. Merely on the principle of the greatest good to the greatest number of people the multi-family district has a valid claim to fair treatment in the scramble for sites.

At this point should end this very elementary discussion of the comparison of housing types and their relation to land utilization on low-value sites. But one more factor looms up—*looms* is the word, because it is another housing type, the high elevator apartment house.

### The Tall Multi-Family Building

To some people this will seem like the last straw.

"What! The skyscraper apartment on outlying land! That is the problem of the big city," it will be objected, "where alone people can afford the high cost of a fireproof elevator apartment."

Nevertheless, unwelcome though it sounds to some ears, the practice of building tall elevator apartments on low-priced land has already begun near Philadelphia and New York City. It is profitable business and there is good reason for believing that it will spread. If so, small towns and cities will face a far graver problem than even the walk-up apartment presents. It may be worth while to indicate what this problem is.

Much of the problem is stated when it is realized that all the considerations governing the "walk-up" building, of four stories or less, apply to the tall elevator building, but in higher degree. The disruptive effect on land values can easily be calculated and it requires no detailed presentation here. The most important factor is the influence of the construction cost per room of the low-rental fireproof elevator structure.

Architects are beginning to perceive that the spread between "walk-up" and fireproof elevator apartment costs is not very great, ranging from no more than 8 per cent to 15 per cent of "walk-up" costs in various cases. Hitherto, the skyscraper apartment has been built almost solely for people of means who wanted expensive non-essentials in the form of luxurious equipment, finish and architectural enrichment. Eliminate these, and the high construction cost per room is not so high after all. Furthermore, in the last two years, the auto-

* The author of these articles is of the firm of Arthur C. Holden and Associates, Architects, who have acted as consulting architects to the New York State Board of Housing, and also to the New York Commission for the Revision of the Tenement House Law.

matic elevator has been perfected to a point where it gives satisfactory service in both medium-priced and high-priced apartment houses. The automatic elevator makes a big saving in operating expense, equivalent to a cut of two or three dollars a room a month in the rental cost of low-priced apartments.

**The Tall Type May Be Cheaper**

Thus, when it is seen that the fireproof elevator apartment house is not very much more expensive per room in construction cost than the low, non-fireproof walk-up, and that its operating cost is about the same, it is easy to figure that the more intensive land utilization of the tall type largely offsets its higher construction cost per room. And, if one refers to the tables of land costs per room for the row and individual house types, one sees that the tall elevator apartment can actually be cheaper! More specifically, if the cost of a room in non-fireproof construction is $800 for building alone, then it costs $900 to $1,000 per room to construct a fireproof apartment. Assuming a land cost of 25 cents a square foot and the same coverage for both the ten-story elevator apartment and the single-family type, we have a total cost per room of land and building of some $967 for the single-family house and $917 to $1,017 for the ten-story elevator. As the land value rises above 25 cents per square foot, the comparison grows rapidly more unfavorable to the single-family type, and to the row type as well.

Of course, the "walk-up" apartment has itself great economy of land, and at these low values it remains somewhat cheaper than the high building. But it, in turn, succumbs when the land value rises to $5 or $6 per square foot. This comparison holds for five- and six-story buildings, which in New York City are not required to be fully fireproof. But in most other cities the code requires that an apartment must be fireproof if more than four stories, or in some cases three stories, high. In these cities the land-value figure at which walk-up and skyscraper apartment costs per room cross are nearer $2 or $3 per square foot.

On the basis of these figures, it may be argued that on low-priced land of $1 per square foot or less, the tall apartment building could be restricted to a site coverage of 10 per cent or even less without imposing too heavy a financial penalty. In that case the land cost per room and per family would be almost negligible. And be it remembered that tenants will generally pay a higher rental for an elevator apartment than for one in a "walk-up." To most people the elevator represents the difference between a flivver and a "real" motor car.

Thus, under a sound policy of land utilization the skyscraper apartment may be not so terrible after all. We see a picture of people of the wage-earning class housed at low rents in a beautiful tower—like a medieval princess in a fairy story—and this tower in the midst of a park. Millionaires in cities are often worse off for homes than this. The skyscraper apartment, as well as the "walk-up," can have the ideal setting of the "garden" type. But under present practices, the entrance of the skyscraper apartment into smaller towns and cities may mean ruin, a worse disaster than a big earthquake. Viewing the situation without prejudice, is it reasonable to suggest to municipal authorities and city planners that they look into the problem of the skyscraper apartment on low-value sites? The entrance of this Frankenstein upon the housing scene is ominous. Hitherto, the effect of tall buildings in elevating land values has been confined chiefly to the centers of a few cities. That, however, is because the skyscraper is still comparatively a new invention, newer than the motor car, far bigger, and as revolutionary in the changes which it is causing.

**The Basis of Efficient Housing Production**

But now, the skyscraper appears in the towns and small cities. There its effect in raising land values should not be so great, no doubt, as in the heart of the big cities where no belt of encircling land is mandatory, but it will be evil enough. It should make still harder the job of preserving the single-family house for the majority of the population. Already that job is difficult enough—so difficult that greater efficiency in housing production is essential. Responsibility for efficiency in housing rests largely upon the building industry. But the basis of efficiency in housing production of any type is a sound policy of land utilization, and that is the province of the municipality.

# An Appeal for the Conservation of Natural Beauty

FIFTEEN organizations, headed by the National Committee for Restriction of Outdoor Advertising, 119 East 19th Street, and including among others the American Federation of Arts, Garden Club of America, General Federation of Women's Clubs, Massachusetts State Federation of Planning Boards, National Conference on City Planning, Adirondack Mountain Club, American Nature Association, Citizens Union of New York, City Club of New York, and Community Arts Association, Santa Barbara, Calif., have united in the following appeal:

*To the Chambers of Commerce and Civic Organizations of the United States:*

You are organized to foster the best development of your town and community—not only the development of its commerce, but of everything that makes it a better community in which to live. Therefore, we believe, you should support the present national movement for the conservation of natural beauty.

Business, if successful, enables us not merely to exist, but to live, to grasp some of the higher and finer things which make existence worth while. If then business in its forward surge overrides these finer things and destroys them, it has defeated its own ends.

Beauty, and especially outdoor beauty, is one of the finer things of life. Outdoor beauty is not merely a commercial asset to your community. It is one of the greatest character-moulding influences of the nation.

This beauty is today threatened with destruction. Advertising, following the stream of automobile traffic, is spreading out along our highways, commercializing our landscape, and very seriously damaging the beauty of our country. And now a new invention is announced which by beams of light will throw advertising on the clouds and commercialize the sky.

If the beauty of America is to be saved the American people of this generation must call a halt. We must insist that the landscape is no place for advertising, that outdoor advertising should be kept in commercial districts. We must convince our courts that the rural billboard is a public nuisance. As the National Real Estate Association has well said: "The natural beauty of our country is a public heritage to be conserved. It is a community possession, and no individual and no corporation has the right to despoil the natural scenic beauty of the land for private profit."

We do not ask you to oppose outdoor advertising.

We do ask you to insist that such advertising shall not mess up the landscape. About 1 per cent of national advertising today stands on the landscape. Eliminate that 1 per cent. Keep outdoor advertising in commercial districts and save the beauty of America.

Effectual relief can come only through public opinion crystallized in legislation. Reformed standards on the part of the organized billboard industry may improve conditions somewhat. They cannot effect a cure (1) because the industry still assumes that the landscape is its legitimate field for advertising, and (2) because there is a vast deal of outdoor advertising over which it has no control. We urge you to do your part towards the development of public opinion.

# The New President of the American Road Builders' Association

AT the annual convention of the American Road Builders' Association, held in Cleveland last month, R. Keith Compton, Director of Public Works of Richmond, Va., was elected president. A civil engineer, head of an important municipal department, thus succeeds to a position to which leading state highway officials have ordinarily been elected—Colonel Compton's predecessors as President of the A. R. B. A., during the last three years, having been C. M. Babcock, State Commissioner of Highways of Minnesota; H. G. Shirley, Chairman, Virginia State Highways Commission, and W. H. Connell, Engineering Executive and Deputy Secretary, Pennsylvania Department of Highways.

As Director of the Department of Public Works of Richmond, Colonel Compton has the responsibility for the success of the following bureaus of the city government: Surveys and Design; Sewers and Bridges; Streets: Cleaning, Garbage Collection and Disposal; Parks, Playgrounds and Cemeteries; and Harbor.

In a letter dated January 18, 1928, to THE AMERICAN CITY, the new President of the American Road Builders' Association expresses the opinion that with the planning of wide, high-speed boulevards, regulated by traffic lights and with the pedestrians as well as the automobilists obeying the traffic rules, problems of traffic congestion will be largely solved. Colonel Compton doubts the advisability of planning for double-and triple-deck streets, except perhaps in the largest municipalities. He points out the fact that now is the time for the smaller municipalities to follow out a standard scheme of city planning by making their major thoroughfares of sufficient width to carry any anticipated increase in traffic; that the construction of double- and triple-deck streets would involve enormous costs; and that to delay much longer the widening of thoroughfares would be equally unfortunate, owing to the steady increase in property values. With the continued increase in traffic, unless the point of saturation in the use of automobiles is soon reached, he believes that many cities will find it necessary to prohibit absolutely the parking of machines in the business sections during daylight hours, and to resort to the installation of central garages. He has Richmond in mind in this respect, where one central garage has practically been completed and another is about ready to be started.

COLONEL R. KEITH COMPTON

# Jamestown Pays Tribute to Former Mayor, Samuel A. Carlson

SAMUEL A. CARLSON

ON January 5 more than four hundred of the leading citizens of Jamestown, N. Y., united in a testimonial dinner to Samuel A. Carlson, who had retired on December 31 after nearly twenty years of service as chief executive of the city and ten years of prior service in other city positions. Judges, clergymen and captains of industry praised the ability and non-political character of the Carlson administration, under which Jamestown is said to have enjoyed the lowest cost of municipal utility service in America, with tax levies of less than 4 cents per day per capita, coupled with high moral and civic community standards.

Mayor Carlson has for years been a leading figure in the New York State Conference of Mayors and Other City Officials, and at the 1926 convention was elected president of that organization. He is now open for engagement as a lecturer on municipal problems.

# Eighty-Seven Years Old, and Head of a Sewer Department

BERNARD CONROY, of Indianapolis, Ind., is probably the oldest active head of a sewer department in any city, large or small, in the United States. Two years from now he will celebrate his 50th anniversary as an employee of the Sewer Department. It is interesting to note that Mr. Conroy celebrated his 87th birthday by a trip with newspaper men throughout the Pogues Run sewer, one of the largest in Indianapolis, which runs diagonally for ten miles beneath the business district. The noise of the traffic overhead, street cars, trains and trucks, as well as the escaping steam from industrial plants and institutions, make this sewer the noisest in the city and, since it cuts diagonally across the business district, it is also the darkest, as there are very few manholes. The guests gave up one by one and Mr. Conroy was the only one to finish.

During his 48 years of active service in the Indianapolis Sewer Department, Mr. Conroy has seen the sewer system grow from a "one-string affair" to the present system of over 500 miles, with its thousands of manholes, tens of thousands of basins and inlets, interceptors, flood-gates, flush-basins and other complicated equipment necessary to the proper operation of a modern sewerage system. The personnel has grown from Mr. Conroy and one helper to about thirty men. There are three emergency gangs of three men each who attend to complaints.

BARNEY CONROY, 87 YEARS YOUNG

*For portraits of Water-Works Superintendents and Fire Chiefs, see pages 11 and 21*

# A New Town Planned for the Motor Age

*City Housing Corporation Announces Important Project for a Model Community in New Jersey to Be Developed With a Novel Street and Parkway System and Built on a Limited-Dividend Basis*

By HENRY M. PROPPER

PURCHASE of 1,005 acres of land in Bergen County, New Jersey, on which will be built a community planned from the beginning for the age of the automobile, was announced on January 24 by the City Housing Corporation, a limited dividend company, through its President, Alexander M. Bing.

THE SITE ON WHICH RADBURN IS TO EE BUILT

The new community, which is to be named Radburn, will be situated between Paterson and Hackensack, about 17½ miles from New York City, along the line of the Erie Railroad at Fair Lawn. On what is now farm and pasture land, it is planned to build a complete town for a population of about 25,000, providing for industry, business, homes and recreation. The land purchase involved an expenditure of more than $2,000,000, and the completed town will ultimately represent a value of between $50,000,000 and $60,000,000, it is estimated.

Radburn will be unique and significant for two important reasons, it is thought, on the basis of the plans now being developed. For the first time, Mr. Bing believes, the building of a city or town will be related definitely to the motor age and the way of living which has resulted from its advent. Also, it will be an initial step toward a more economic and efficient growth of the New York region, by providing adequately for industry and affording workers comfortable, modern homes with gardens and parks, without further burdening existing transit and transportation facilities. In other words, it will not be another dormitory suburb sending most of its employed inhabitants into New York every morning and out again every evening. Although there will be some commuters, it is expected that the majority of the workers in Radburn will be employed in the town itself or in neighboring factories and business establishments.

### A Novel Street and Parkways Plan

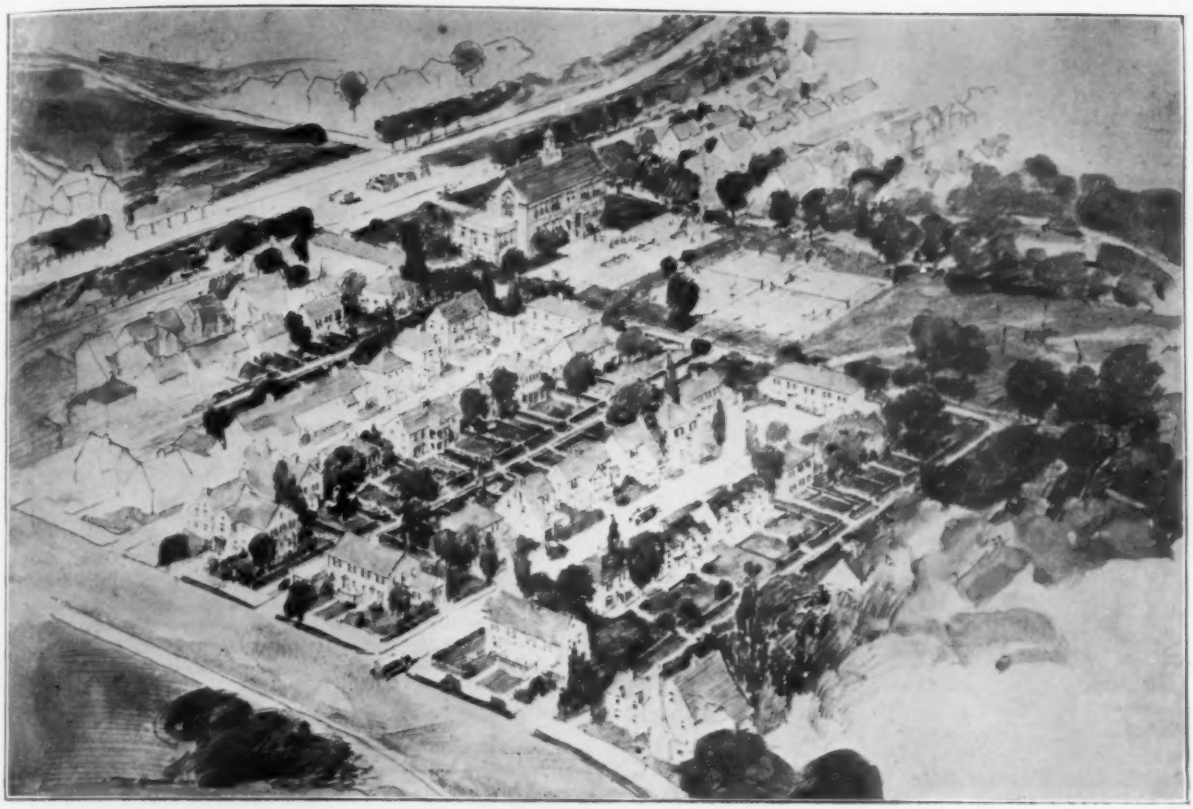
Of even greater significance, however, is thought to be the novel street and parkways plan by which it is proposed to fit the town to the needs of the motor age by making it a safe place for children and pedestrians, and for automobilists as well. Through motor routes will be provided for fast traffic, but not at the expense of the safety and comfort of the families occupying homes in the residential sections. The homes will front on side streets, which will not, however, afford through communication. They will be used only for access to houses facing on them.

The most notable innovation in the plan will be a complete system of parkways and garden paths for pedestrians, which in a sense will be complementary to the street system. Children will be able to go a half-mile to school along these paths and parkways without crossing a street; they will have playgrounds in the park areas which can be reached by tree-lined paths leading directly from their homes; and neighborhood shopping centers will be equally accessible, with the same safety.

Up to this time, cities and towns have been built around a street system planned for horse traffic. Houses were built to front on the street, which was a pleasant and comparatively safe place. With the coming of the automobile and the motor truck, however, streets have taken on a different character. They have been preempted by the automobile. Much of our present difficulty, Mr. Bing believes, is due to the conflicting use to which streets must now be put, since they are required to accommodate fast through traffic, local traffic, and pedestrian use, and in most cases are the only places where children can play.

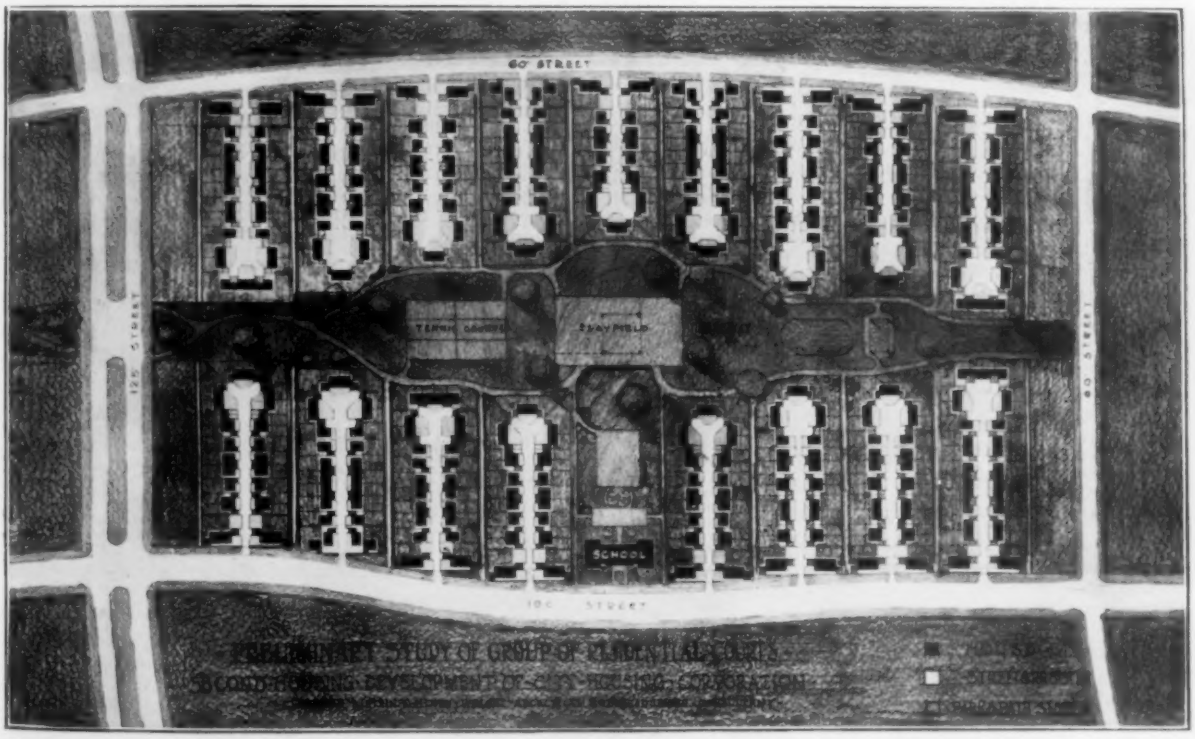
In Radburn it is planned to build highways, streets, paths and parkways, each for its special use. The highways will provide for through traffic and give access to the short side streets where most of the houses will be located. On the other side the houses will face individual gardens from which will run a path leading directly to a parkway. Homes for 600 families will be grouped around each of these parkways, which will be about a half-mile long and the width of a city block, and in which will be located a school, playgrounds, tennis courts and community rooms. In this way the cultural and social life of these 600 families will center about the central park space. The town will be made up of a number of these units with connecting parkways.

It is announced that work will begin immediately on the new project. Al-



**PRELIMINARY PLANS FOR A NEIGHBORHOOD UNIT AT RADBURN**

**Two somewhat different arrangements of homes, grouped in "resident.al courts" around the park and playground areas, are shown in these tentative sketches**




**The unique feature of the Radburn plan is the way in which it proposes to make the city safe for children and other pedestrians while providing adequately for automobilists also. For fast traffic there are to be wide motor routes, but not through the residential streets. The houses are to front on cul-de-sac streets which will be used for access only to these houses. The automobile routes will run past the ends of these streets.**

**Within the residential sections of the new town will be a system of parkways and garden paths for pedestrians. Access to these will be by paths running between the rear gardens of the houses. By means of these routes children will be able to go the half mile or less to school without crossing any street. This arrangement is made possible by the grouping of houses for 600 families around a park and playfield strip; additional units on a similar plan to be built as the city develops**

though no definite schedule has yet been decided on, it is likely that several hundred houses will be ready for occupants early in 1929.

### Profiting by Lessons Learned at Sunnyside

The building of Radburn will be the second large housing enterprise which the City Housing Corporation has undertaken. It is now completing the Sunnyside Garden model community for moderate-income families in Long Island City, which, when finished, will provide for about 1,500 families and have a value of $10,000,000.*

The work at Sunnyside was begun in 1924, when the pressure of the housing shortage for families of moderate income prompted a group of prominent men and women to organize the City Housing Corporation as a limited-dividend company and to undertake the building of a model community for families of limited income. Among the directors are Dr. Felix Adler, John G. Agar, William Sloan Coffin, Mrs. Franklin D. Roosevelt, Mrs. Joseph M. Proskauer, Prof. Richard T. Ely, Arthur Lehman, and V. Everit Macy. Included among the stockholders are Felix Warburg, Anne Morgan, John D. Rockefeller, Jr., Mrs. George Gordon Battle, and Ogden L. Mills.

The company sought by large-scale operation, scientific planning and careful experiment to improve house and community planning. Clarence S. Stein, former Chairman of the New York State Commission of Housing and Regional Planning, was chief architect for Sunnyside, and associated with him were Frederick L. Ackerman and Henry Wright, Chairman of the American Institute of Architects' Committee on Town Planning. Mr. Stein and Mr. Wright have prepared the preliminary studies for Radburn, in association with Robert D. Kohn and Mr. Ackerman as consultants. Commenting on his company's experience at Sunnyside, when announcing the New Jersey project, Mr. Bing said:

"Many important aspects of the plans being prepared for Radburn can be traced to what we have learned in the building of Sunnyside. One of the primary purposes with which the City Housing Corporation started its work four years ago was to provide much more open space and gardens in housing for families of moderate income and to give their children adequate, safe places in which to play.

"Sunnyside, however, is within the limits of New York City, and we had to follow the rectangular or gridiron street plan which is required by the city authorities. After some experimenting, a plan was devised which provided large interior garden courts, shared in common by the residents of each block. These block interiors, offering a pleasant relief from the bustle and noise of city streets and providing safe places for small children to play in, now constitute one of the outstanding features of the Sunnyside community.

Another experiment worked out at Sunnyside was the development of the Pomander Walk type of grouping houses, in which the buildings are arranged in U-shape around a garden court, the open end of which is on the street.

"Out of these two experiments has developed the larger-scale plan for Radburn. The fact that in New Jersey we shall be able to devise our own street system has given us the necessary freedom in planning and will make it possible to effect important economies. Since the whole community will be planned from the outset, streets can be built for their permanent use. Side streets in the residential sections need be no wider than is necessary to serve the given number of houses to be built on them, and in the same way main thoroughfares can be made adequately wide from the outset to avoid all congestion.

"The experience gained at Sunnyside will be valuable in other ways. The City Housing Corporation has demonstrated that the economies of large-scale production can be applied to the building and sale of moderate-price homes just as in other fields, and at Radburn it will be our purpose to operate on even a larger scale than at Sunnyside. The savings effected in this and other ways will, I feel sure, make it possible to build a substantially better house than the market affords for moderate-income families and still keep the price well within their reach. At Sunnyside the average small, brick, one-family house sold for about $8,500. In New Jersey we hope to produce good houses for a substantially lower figure.

"The importance of Radburn in its relation to the development of the plan for the New York region will be demonstrated more fully in the years to come. Virtually every expert who has studied New York's growth and the resulting congestion and problems of traffic, housing, and transportation, has agreed that some orderly plan needs to be followed if the metropolitan district is to function with freedom and efficiency.

"By planning from the outset for a balanced town which will contain industry, business and residence, we hope to indicate that this growth can be made an orderly, economical and efficient process from which the region will benefit."

* See THE AMERICAN CITY for March, 1925, page 277; and February, 1927, page 159.

## A New Combination of Old Forces Affords An Efficient Rural Health Center

THE keenness, progressiveness, and community-mindedness of rural residents in many parts of the country today are typified by the activities of the Deering Center (N. H.) Women's Community Club. In its efforts to improve health conditions in sparsely settled sections of the state, the Division of Maternity, Infancy, and Child Hygiene has (according to an article by William Doherty, in the January issue of *Rural America*) found a tremendously efficient ally in this club.

On Sunday, October 2, 1927, through the combined efforts of these agencies, one of the best-equipped permanent rural health centers in the country was thrown open for the inspection of the people of Deering and nearby towns. The center was the direct outgrowth of a series of joint child health conferences in connection with which clinics were held and children were examined, weighed, measured, and given preventive and corrective treatments, and mothers were instructed in elementary hygiene and child feeding.

Splendid future programs have been planned. The Health Center will have the continued active cooperation of the State Board of Health, and the above-mentioned divisions. Arrangements have been made for classes for mothers and older girls. The Red Cross will conduct classes in first aid and practical home hygiene. Furthermore, at the request of the men of the district, emergency aid classes will be organized for them. It is hoped, Mr. Doherty reports, that periodical adult physical examinations as thorough as those planned for children may be adopted at a little later date.

## State Health Commissioner Protests Against Advertisements of High-Speed Automobiles

IN a health talk broadcast on December 23 by radio station W G Y, Dr. Matthias Nicoll, Jr., New York State Commissioner of Health, predicted that new high-speed automobiles would increase enormously the danger to life and limb. The prediction was based on advertised speeds of 55 to 65 miles. "There is only one reason for advertising this feature," Dr. Nicoll said, as reported by the Associated Press, "that is, to sell more cars. Many people are going to purchase a machine largely on account of its speed. Now what does that mean? Just so many thousand more death-dealing vehicles on our highways."

Dr. Nicoll prophesied that unless motorists drive at conservative speeds, "the time will come when every car will be equipped with a governor to prevent a speed greater than twenty miles an hour * * * for no longer can the Empire State countenance the loss of 6 lives and the maiming of 225 persons every day."

Readers of THE AMERICAN CITY will recall the protest of the Better Traffic Committee of Pittsburgh against excessive-speed advertising, quoted in the November, 1927, issue of this magazine. Reckless manufacturers must share with reckless drivers responsibility for the terrible toll of fatalities on American highways.

# Restaurant Inspection—A Public Health Activity Too Often Neglected

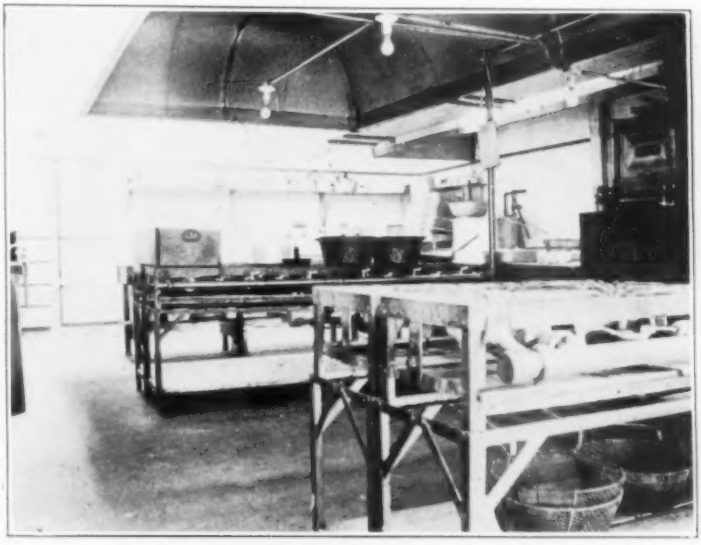
***Sanitary Condition of Public Eating Places Assured Only Through Frequent Inspections by Health Officials***

*By* A. G. WIGLEY AND A. I. GOEHRIG

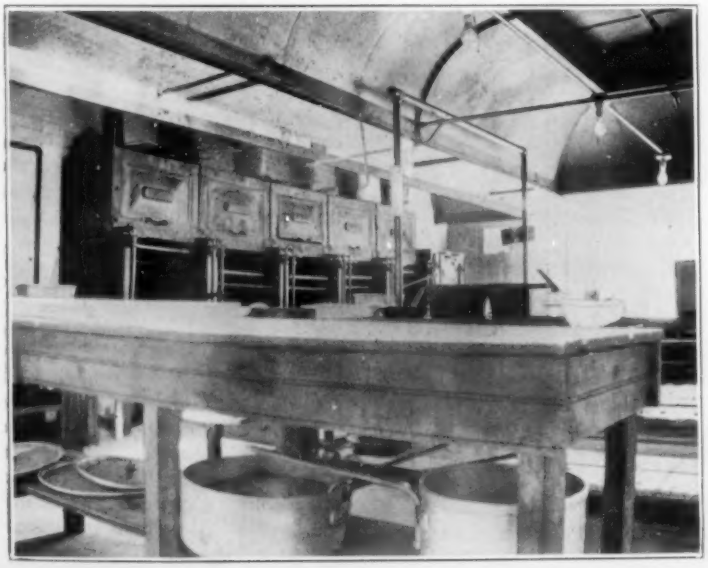
INSPECTORS, BUREAU OF FOOD AND DRUGS, DEPARTMENT OF HEALTH OF THE STATE OF NEW JERSEY

PRACTICALLY everyone asks the question, "When do we eat?" But how many ever stop long enough to think about where to eat? The place to satisfy hunger certainly should be as important as the time, and health officials should stimulate their constituents to want to know something about the eating establishments they patronize. Is the food clean, appetizing, and wholesome? Is it prepared and cooked in a clean kitchen by clean cooks and attendants? Is it served on clean dishes by clean attendants? Are the knives, forks, and spoons clean? These are questions which the patron of a public eating establishment should ask, and which the board of health should be prepared to answer accurately.

The public must be made to realize that the patron of most hotels or restaurants is at a considerable disadvantage in that he cannot see how or where his food is prepared. The dining-room of a high-class establishment may be complete in its appointments, the table linen immaculate, the dishes of attractive design, the silverware fit for the most fastidious, the waitresses daintily garbed and smiling, but pass through the swinging door leading to the kitchen and very often the sight beheld is quite different. The conscientious proprietor will insist upon a clean, well-ordered kitchen that is a delight to visit, but his competitor may still believe in the old doctrine that "what the public don't see won't worry 'em." The patron should look to his health department for honest information about conditions on the other side of the kitchen door.



VIEW OF RESTAURANT KITCHEN, SHOWING STEAM TABLES
A hood ventilator carries off cooking odors and soot and smoke



THE WORK TABLE AND UTENSILS IN THIS WELL-ORDERED RESTAURANT KITCHEN ARE THOROUGHLY CLEANED AFTER EACH USING

The frequent inspection of all eating establishments is one of the chief duties of local boards of health. It is not an easy job, for there are almost "57" varieties of eating establishments, ranging from the large hotel in a city, seaside or vacation resort to the humble roadside stand in a country hamlet. There are large and small restaurants, cafes, cafeterias, lunch rooms, tea rooms, coffee rooms, lunch wagons, luncheonettes, frankfurter stands, and what not. In them all varieties of foods are prepared and handled for public consumption.

### What Restaurant Inspection Includes

The Bureau of Food and Drugs, of the New Jersey State Department of Health, for the past three years has detailed one of its staff to devote his entire time to assisting local boards of health in the inspection of eating establishments. He does not, of course, visit every lunch room or kitchen in the state often enough to guarantee a reasonable state of cleanliness at all times. What he aims to do, especially where there is

an alert board of health in the community, is to stimulate interest in this very important work. The local health officer or inspector accompanies the state representative and discusses with him the technique of restaurant inspection and the particular problems in the local community. Profiting by the broader experience of the state representative, the local official is better able to carry on a satisfactory inspection service. It should be noted, however, that in several cities of the state the local authorities independently carry on routine inspection of eating places in a highly creditable manner.

What an inspection of the ordinary hotel kitchen, restaurant, or lunch room includes may be of interest. It is unnecessary to say that all foodstuffs, both fresh and canned, should be of good quality. Perishable articles always should be fresh. Milk, for safety's sake, should be pasteurized and should be purchased from a reliable dealer. For table use it is preferable to have it served in the original half-pint bottles so that the diner can pour it, or see it poured into a glass. Meats should be of first-class quality and well selected. This applies to seafood, such as fish, crabmeat, oysters, and clams. In serving foods such as slices of cooked meat and pats of butter, handling with the fingers of the chef or attendant should be avoided.

### How About the Ice Water?

The water-supply in a city, if a public one, is usually safe for drinking. But how about the ice water? In some of the large hotels a cake of ice is placed in a wooden tub and cracked with a hatchet or ice pick, the small pieces of ice being ladled into glasses for service. The wooden tubs frequently become badly worn, so that small particles of wood scale off as splinters, making it impossible to keep the tubs clean. Large earthenware crocks are better suited for this purpose. If wooden receptacles are used, they should be of new stock and replaced as soon as the wood becomes slightly worn.

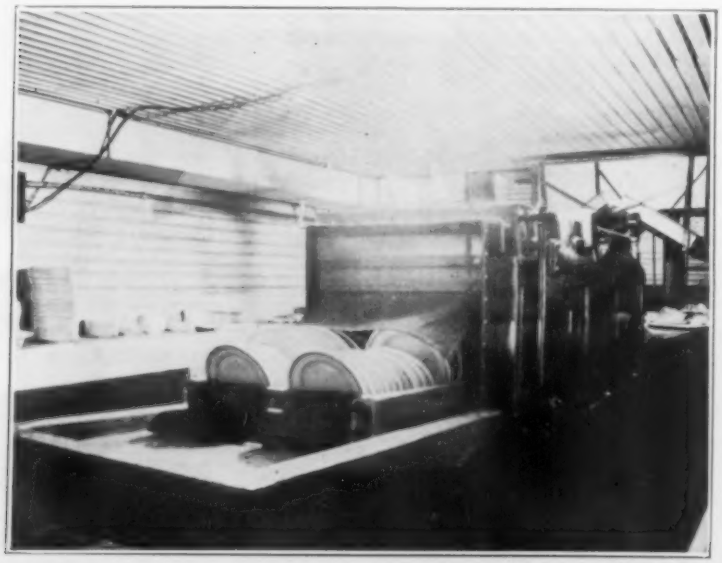
### Light and Ventilation

The kitchen should be well lighted and ventilated and of sufficient size for the volume of work performed. Overcrowding results in confusion among employees, poor arrangement of equipment, and carelessness in handling food and washing dishes. Artificial means of carrying off odors, soot, and smoke from stoves usually is necessary.

### Floor and Walls

The floor of the kitchen preferably should be of cement or other impervious material which will not absorb grease and dirt and can be cleaned easily. The use of sawdust to absorb the grease and hide the dirt is not practiced in the better-regulated kitchens. Sidewalls and ceiling should be of smooth construction and kept free of cobwebs and grease and dirt accumulations. Painting with a light-colored paint at frequent intervals is recommended.

**NOTING THE CLEANLINESS OF THE ICE BOX AND THE CONDITION OF THE FOODSTUFFS STORED IN IT IS INCLUDED IN RESTAURANT INSPECTION**
**A representative of the State Department of Health is examining this refrigerator**



**PRESSURE DISH WASHERS ARE USED IN MOST LARGE EATING ESTABLISHMENTS**
**Remnants of food are scraped from the dishes (in background), they are placed on wooden trays, and as they pass through this washer receive first a bath of strong hot alkali solution, and then clean hot water**

### Metal Cans for Garbage; Screens for Windows

Waste liquids from the floor, dish washers, sinks, etc., should be discharged into the town sewer, or, if none is available, should be disposed of in some other way so as not to create a nuisance. Garbage must be deposited in metal cans, provided with tight covers and removed daily. The garbage cans, after being emptied, should be scalded with hot water and a little ammonia to prevent offensive odors and make them less attractive to flies or other insects.

### Flies and Roaches

Screens must be provided for all doors and windows. Flies like to light upon and eat exposed food, and they like the fifth and garbage as well. A clean, well-kept kitchen, with all foodstuffs covered and waste materials promptly disposed of, will do much to keep away these ever hungry and filthy insects. It is also necessary to keep out roaches and vermin. Too many restaurateurs still believe that roaches are a necessary evil in a kitchen. This is not true—roaches can be kept out of the kitchen; why not the restaurant?

### Regulating the Cleansing of Dishes and Utensils

By far the most important sanitary problem in any eating establishment is the cleansing of dishes and utensils. Two years ago, at the request of the State Health Officers Association, the State Department of Health enacted a regulation on this subject, which reads in part as follows:

All hotels, restaurants, cafes, soda fountains, and other places where food is produced, manufactured, stored, cooked, prepared, distributed, and sold, or intended for sale for human consumption, shall be provided with adequate facilities for the treatment of cooking and eating utensils by boiling water, or steam under pressure, or by other means which shall yield the same results; and all utensils intended for a second use, including pots, pans, dishes, plates, cups, saucers, glasses and other containers repeatedly used for food, and all knives, forks, and food implements shall be subjected to treatment with boiling water or steam under pressure, for at least three minutes after each service, or by such other method that effective sterilization of each article shall be properly carried out between each use."

The larger and better-equipped hotels and restaurants have pressure washers. The apparatus commonly used consists of a hooded rectangular vat divided into two compartments, one containing hot water and an alkali solution, and the other hot rinse water. After the remnants of food are scraped from the dishes, they are placed on wooden trays in the washer. By means of motor-driven pumps the dishes are sprayed first with the alkali solution and then with hot rinse water, and delivered at the outlet of the washer clean, warm, and fairly dry.

The ice boxes or refrigerators must be kept clean. Milk products, of course, should be kept in compartments separate from fish, meats, or strongly flavored foods. A low temperature should be maintained at all times in the ice box to preserve satisfactorily the foods stored therein. The inside of steam-tables, used for keeping roast meats, vegetables, and all cooked foods warm until served, should be cleaned thoroughly at least once a day. Cupboards, drawers, and shelves for pastry, breadstuffs, cutlery, silver, and utensils should be dust-tight, clean, and fly- and vermin-proof. The practice of using old newspapers that have been gathered from unknown sources to line the shelves and drawers is not approved. New wrapping paper or waxed paper is preferable.

### Sanitation for Employees

The attendants must be neatly attired and cleanly in their personal habits. Proper toilet accommodations should be provided for them, which should not open into any room where food is prepared. Wash sinks, soap, and individual or paper towels should be conveniently located, and proprietors should insist that all employees wash their hands after visiting the toilet. Many local boards of health now require physical examinations of employees to determine whether or not any of them are carriers of infectious diseases such as typhoid fever and diphtheria or suffering from tuberculosis or syphilis. This is surely a praiseworthy requirement from the public health viewpoint, and it is being adopted more and more generally as a means of safeguarding the patrons of public eating establishments.

### Single Service Receptacle Recommended for Small Establishments

The lunch car or wagon differs from the hotel, restaurant, or cafeteria in that a large part of the food is prepared and cooked in full view of the customer. A common but insanitary practice in lunch cars, and other establishments having table-counters, is the display of such foods as pies, cakes, crullers, and puddings uncovered on the counter within easy reach of the patrons. No! we are not afraid that the patron will steal the food within his easy grasp; but the unprotected food is sure to be contaminated by droplets from the nose and mouth of persons coughing and sneezing at the counter, and is accessible to flies. Unless the proprietor provides a glass case or other suitable covering, unwrapped foods should be kept as far away from the eating counter as possible.

The luncheonette is usually attached to a drug store or soda fountain. The biggest problems here are protecting foodstuffs from dust and flies and the proper cleansing of dishes and glasses. Sandwiches should be protected either by inverted glass jars or, better, previously wrapped in waxed paper. Dishes, glasses and eating utensils should be washed in a manner to comply with the state regulation quoted above. Where proper equipment for washing and sterilizing purposes is not provided, single service receptacles are advised. These can be thrown away after each use.

### Roadside Stands and "Comfort Stations"

Roadside stands have sprung up like mushrooms along the highways of the state wherever the automobile traffic is heavy. These stands are located usually in the sparsely settled districts, and often are operated in conjunction with a gasoline filling-station. Packaged foodstuffs only and single-service eating receptacles are recommended for the majority of these establishments. The water-supplies used by many stands are from questionable wells or springs exposed to surface contamination. The country privy, or as it is more politely called, the "comfort station," frequently is so constructed and maintained as not to be fly-tight. Perhaps the flies first feast upon the excremental matter in the privy, then seek the food on the counter of the roadside stand.

The surroundings of all hotels, restaurants, and eating establishments should be clean and attractive, whether they are located in the city or in country districts. Yards containing accumulations of oyster shells, rubbish, tin cans, and garbage are not only unsightly but may become a nuisance.

Restaurant kitchen inspection should be a part of the health service rendered to the community by every board of health. But the technique of making a really valuable inspection of food-handling establishments is not so simple as it would seem. The inspectors of the State Department stand ready to assist local health officials in inaugurating a restaurant inspection program.

EDITORIAL NOTE.—One city that is striving for continual progress in the above respects is Detroit, Mich., where all food-handling establishments, including restaurants, bakeries, markets, stores and factories, are inspected by the Food Division of the Department of Health from time to time during the year. This work is described in the October, 1927, number of the Department's bulletin, *City Health*.

## Average Span of Life Increased Thirty-Eight Years in Four Centuries

THE average span of human life has increased from 21 years during the sixteenth century to 59 years for the twentieth century, according to compilations made by the Pennsylvania Department of Health, made public by the United States Public Health Service on December 23.

The comparison is based on historical research, it was stated orally at the Public Health Service to a representative of the *United States Daily*, and shows that during the period 1501 to 1600 the average length of human life in Geneva was 21 years, and that during the intervening centuries up to the present, it has gradually increased. In 1919-20, in the state of Wisconsin, the average length of life was 59 years, and this is accepted as a criterion for the world as a whole. It is shown in the compilation that from the sixteenth century to the seventeenth century the span of life increased from 21 to 26 years, thence the following century to 34 years and gradually upward.

According to the Surgeon General of the Public Health Service, Dr. Hugh S. Cumming, steady improvement of living conditions, and the development of medical science in evolving methods of combating and controlling disease prevalence, all have had the tendency of increasing longevity.

It is reasonable to believe, Dr. Cumming said, that the span of life will continue to increase with the solution of present problems confronting medical science.

# Roadside Trees and Public Utilities on Highway Rights-of-Way

THE difficulty and importance of regulations governing the placement of roadside trees and public utilities on rural highways, representing, as they often do, a conflict of the esthetic and the commercial, are stressed, in a recent issue of *California Highways and Public Works*, by the Maintenance Department of the Division of Highways of the state of California, which has under its supervision all matters relating to permits for work or encroachment in the state highways. The article says, in part:

"Many individuals and organizations have interested themselves in highway beautification, some 685 miles of highways having been planted with roadside trees, the annual cost involved in their care and replacement representing an expenditure of two cents of each dollar appropriated for general maintenance work.

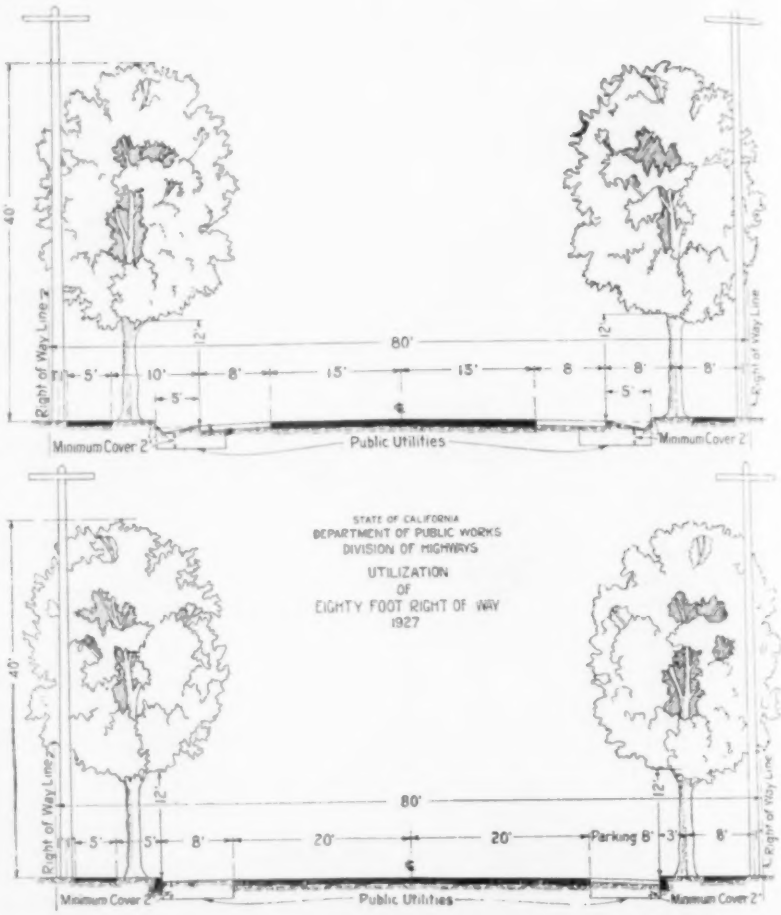
"The highway right of way is also considered the natural location for utilities, as service can be furnished with a minimum of extension lines and the cost of private right-of-way need not be added to the established rates.

"The success of the tree-planting movement, however, has placed a burden on the pole line companies, as the earlier plantings have reached sufficient height to interfere with wires and cause "cross-talk" on the telephone and electric disturbances on the power wires. To avoid topping or cutting unsightly notches through the trees, it is necessary either to raise the wires on longer poles or to move the lines. The public utility companies appreciate the value of the trees and generally, where trimming has been permitted, the work is satisfactory. However, occasionally through carelessness, an unsightly job is done and the public's immediate protest indicates their active interest in roadside trees.

"To minimize this conflict and satisfy both from an esthetic and economic view, at the same time providing for the future development of our highways, it was necessary to assign some definite location within the right-of-way to the trees, poles and service utilities. Placing trees too close to property lines has often resulted in damage to them from the stock within the adjacent fields. Proper cultivation and protection from fire is also hampered by too close proximity to property lines, and the cost of watering increases when trees are located beyond the reach of our one-man tree watering units. Placing poles along the tree line means interference with proper tree growth and, due to continuous trimming for wire clearance, handicaps growth and development of the trees.

"For these reasons it was decided to place the poles at the right-of-way line and the trees adjacent to the curb line. The trees at the future curb line will in time present a vista of green banked foliage restful to the eye of the motorist and to a large extent hiding the unsightly poles.

"The location and maintenance of pole lines within the highway right-of-way and their interference with trees was recently the subject of a thorough discussion before the Highway Commission and the Director of the Department of Public Works by a committee representing practically all of the public utility companies of the state. The conclusion reached substantiated the policies of the Maintenance Department."




**ULTIMATE SECTIONS PROPOSED BY THE CALIFORNIA DIVISION OF HIGHWAYS FOR TWO- AND FOUR-WAY TRAFFIC LANES FOR 80-FOOT RIGHT-OF-WAY**
**In effect, they reserve a clear zone of 56 feet between curbs for road purposes, the remaining space being available for trees, pole lines and sidewalks**

# New Roads from Old

THIRTY years ago it was a common practice to lay brick streets on foundations which now are considered poor, because at that time there was no indication that 22,000,000 trucks, busses and automobiles would be imposing their enormous weight on the thoroughfares of today. Naturally, these bases in many cases have given way, allowing the pavements to become uneven. In the case of old brick streets, the ruts and chuckholes do not mean necessarily that the paving material is worn out. Waukesha, Wis., for instance, has turned its old road material into new pavements. Because neither the base nor the surface were ever properly leveled, these streets became wavy; no one noticed that in the days of the horse-drawn vehicles. The base was later cut up and carelessly patched when utilities were put in, so modern traffic soon made these roads pretty bad.

Waukesha took up the bricks, and, after cleaning, found that 75 per cent were undamaged. They laid 3 inches of cement over the old uneven base, leveled it properly, put on a cushion of sand, and relaid the bricks. They placed the used face of the brick down. The exposed face was true and smooth to the edges and as good as new. Hot asphalt was mopped into the joints to complete the new pavement. This job involved 26,000 square yards, which cost the city $2.01 per yard.

Eighty-five per cent surface salvage has been the experience of Jamestown. Here 15,000 yards of rough paving between street-car tracks had to be replaced. The brick was taken up, new ties laid, the old base patched and covered with 3 to 5 inches of concrete. After cleaning, the old bricks were laid over a sand cushion on top of the remade base. They were laid unused side up, and, after asphalt filling and rolling, the job appeared exactly as smooth and true as entirely new pavement.

Lancaster, Ohio, had a pavement that had stood 35 years. Old-timers say it was carelessly laid to start with. Modern truck traffic finally made it uneven and it was taken up. The brick was dumped beside the road, and property owners were told they might use it for paving alleys. All of it was hauled away before the contractor could pile it. Lancaster now has new alleys paved with brick that appear as smooth as when made over 35 years ago. These alleys built by private contract cost only 60 cents per abutting foot, including grading.

Most states have some economically run city that salvages its old pavement. Georgia has the town of Columbus. Tenth Street between Broad and First Avenue, Columbus, was paved in 1899. It is a 60-foot street with two lines of car tracks down the center. Five years ago they took up the pavement south of the tracks. Men raked the old sand cushion, took off all brick chips and leveled it up. They then turned each brick bottom-side up and relaid it. The whole job cost less than 56 cents per square yard, including the new brick required.

Danville, Ill., did the job for $1.50 per square yard. They used the same system as Columbus, Ga. The bricks were taken up, cleaned, culled of broken or damaged brick, and relaid over a newly leveled base and sand cushion.

Many of these relaid pavements are now five to seven years old. They appear smooth and level. They look and ride as well as new pavements laid at the same time.

# Judge Lindsey Visualizes "The House of Human Welfare"

FOR twenty-seven years, Judge Ben B. Lindsey, with the assistance of social workers, physicians, ministers, lawyers, and humanitarians, carried on a vast experiment in salvaging miscasts of society. Under his jurisdiction, the Juvenile and Family Court of Denver, where this human experiment was conducted, became world-famous. Last spring, on account of political conflicts, Judge Lindsey resigned. In *The Forum* (issue of December, 1927), he sketches in large outline "The House of Human Welfare," the ideal towards which all his work with criminals and delinquents in Denver tended, realized to some extent in that work, and wholly realizable, if not there first, then elsewhere. He says:

"In every city and town in the United States—and every county-seat, if you like—there should be, far from the jail, at the other end of town, a cool, quiet refuge, a sanctuary to which the weary and the heavy-laden, and the spiritually and physically sick, could come or be brought for help. Its purpose would be, not to punish people, but to save them. If they could be saved only by punishment, it would punish; but not otherwise. If society were imperiled by their being at liberty, it would imprison them; but not otherwise. Revenge would be no part of its program. Its work would be medicinal, restorative.

"We created our House of Human Welfare in Denver simply by making the Court a channel through which a large number of humanitarian agencies could coordinate while they functioned. And what made this possible in a way that could have been compassed in no other way was that the Court had judicial power. The state was behind it. . . . With more money we could have worked miracles. We worked them, anyway.

"The work that could be done by a fully developed, well-equipped, adequately supported House of Human Welfare would be as various as human need. Its concern would be the spiritual, physical, and economic health of human beings. Its work would be preventive as well as curative. It would do more than pull people out of trouble, it would try to teach them how to live. To this end it would invite their confidences and their confessions without any attempt at impertinent prying. . . As such, it would be sufficiently impersonal to make confession possible as to a physician; and it would be sufficiently personal to be sympathetic and intimate in its approach. It would have more than the effectiveness of the Roman Catholic confessional, for example, because its point of view would be scientific rather than theological. By this I mean to cast no reflections on the Roman Catholic confessional, which is one of the wisest institutions in the world. I want to see its principles applied on lines broad enough to be available to non-Catholics.

"The House of Human Welfare would fall in line with those educational forces in this country that are trying to teach boys and girls and men and women the ideal of a sane mind in a sound body . . . it would try to become a kind of moral clearing-house.

"I can best illustrate by referring back to my Court in Denver. We dealt there with every kind of human difficulty, and fully two-thirds of the cases that came our way came of their own accord. Even after the Ku Klux Klan had succeeded in ousting me and in destroying the system which I, with the help of my associates, had built up, hundreds of people in need of help and guidance still continued to come to my home. . . . They said in effect: 'We don't want a law court; we want help. We can't afford lawsuits and lawyers. We want someone to talk to in private, someone who will listen, and advise us, and tell us what we should do.' . . . It made me sorrier than ever that my successor was 'neither a sociologist nor a psychologist'."

Judge Lindsey's colossally conceived service center, which might be, most fittingly, "housed in a single, impressive building—a social temple, of a beauty and dignity in keeping with its functions," would have to do mainly with certain broad problems of human life so universal that they affect us all more or less vitally. It would have to do, specifically, with that lack of balance in the emotional life which seems to be at the root of most human troubles, and which needs the combined services of a great many kinds of specialists to determine whether it springs from wrong environment, wrong training and education, or ill-health, or a combination of them all. It would diagnose and correct much of the adult infantilism which Judge Lindsey calls one of our national maladies, and into causes and conditions of which he has gone extendedly in his books: "The Revolt of Modern Youth," and "Companionate Marriage." Sex education and the education of parents would be among the chief functions of the House of Human Welfare, of which Judge Lindsey says, finally:

"We had a working model . . . out in Denver, and though the model has been smashed, the plans and specifications still exist in the record made by my old Court. I have faith that the same thing will come again to life, either in Denver or elsewhere, on a vastly larger scale; and that the House of Human Welfare, in the fulness of time, will become a reality, not in a few scattered places only, but throughout the length and breadth of America and, ultimately, of the civilized world."

*The degree of responsibility which a man feels for the conditions which exist in his community is the measure of his worth as a citizen.*

—ALEXANDER KARR.

*Coldwell Model "L" Motor Lawn Mower and Roller, showing Detachable Gang Units*

# An Overwhelming Tribute to Leadership

Why have so many of the best kept-up cities and towns in the United States adopted the Coldwell Model "L" Motor Lawn Mower and Roller?

## The answer is in the lawns

City officials and park superintendents are invited to send for literature which describes in detail the Coldwell Model "L."

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*DEPENDABLE* LAWN MOWERS

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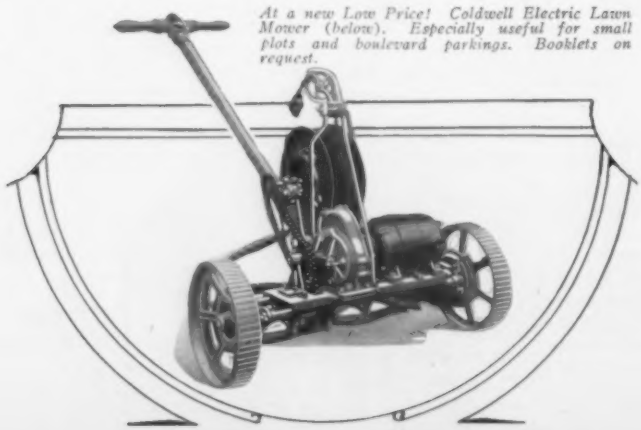
COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.

*At a new Low Price! Coldwell Electric Lawn Mower (below). Especially useful for small plots and boulevard parkings. Booklets on request.*



# Removing Needless Irritants to Traffic

*Facilitation and Safety of Traffic Require the Ridding of the Highways of the Elemental Irritants of Mud and Darkness and the Man-Made Irritants of Unwise Restriction*

*By* SIDNEY J. WILLIAMS
DIRECTOR, PUBLIC SAFETY DIVISION, NATIONAL SAFETY COUNCIL

DRIVING home after midnight from a meeting in Chicago I was confronted, at a suburban corner, by a red signal light. The only vehicles in sight in any direction were my own and one other going the same way. The other driver hesitated, then drove through the red light, and only my conscience as an officer of a safety organization prevented me from following him.

Every morning, if I drive to work, I must pass that signal light. If it is red, there are generally half a dozen vehicles waiting on the street which I travel, which is a moderately busy suburban street. Rarely is there any vehicle on the intersecting boulevard, whose load on the week days is very light. The signals at this and some other points on this boulevard are undoubtedly a public benefit on Sundays and holidays, but at other times they are an inexcusable delay for the motorsits, to say nothing of the taxpayers' money that is wasted on power and maintenance.

Until recently every vehicle traveling north on one branch of Sheridan Road was halted by a stop sign at a certain intersection leading to a popular bathing beach. During certain hours of certain days in the summer this sign served the laudable purpose of protecting great numbers of bathers. The sign, however, was on duty twenty-four hours a day, 365 days a year, and most of that time it formed a useless impediment to traffic. Since Chicago acquired a real traffic engineer, a "slow" sign, illuminated, has been substituted at this point, to the great benefit of all concerned.

The National Safety Council still receives, every little while, a drawing or a patent expressing some new idea for the obstruction of traffic at railroad grade crossings. Cobblestones, loose sand, and reverse curves, combined with all manner of concrete fortifications, are to compel the luckless motorists to slow up and recognize that he is approaching something perilous. How a driver piloting his car through these mazes is to have any attention left for a possible railroad train, the inventors do not elucidate.

### Motorists Don't Need Handcuffs with Ball and Chain Attachment to Make Them Behave

We do not believe in any of these traffic irritants. We do not believe that modern traffic needs to be put in handcuffs with a ball and chain attachment, to make it behave. We believe that when any traffic regulation or traffic control equipment is proposed, the burden is on the proponents to show, first, that there is need for the same and, second, that it may reasonably be expected to result in greater safety to the users of the highway or to expedite the traffic more than it will delay it. We believe that the motorist's hands and eyes and brain should be kept just as free as possible from unnecessary distractions, for his difficult task of driving safely through a busy street or down a popular highway. We believe there must be a clear distinction between, on the one hand, uniformity in traffic control equipment and practices, the desirability of which need not be argued here—and, on the other hand, the most careful engineering study in applying these standards to each particular situation. We believe that, considering the enormous volume of motor traffic today, and the great sums spent annually on motor transportation in even the smaller communities, the problem of handling this traffic safely and comfortably demands the very best to bear on it. This applies not only to every state and every city as a whole, but to each individual highway or street and each individual intersection. It applies not only to the design, construction and maintenance of the street and highway system, but to the equipment of it with the most modern devices for securing the maximum use of each highway and street.

It follows from this that we support without question the proper control by state highway departments of the highways under their jurisdiction, including such portions as lie within the smaller cities and villages—always assuming, of course, that such control will be exercised with proper regard not only for the safety and convenience, but also for the sensibilities of the officers and citizens of the municipalities.

### The Village Board and the Podunk School House

Nothing happens in this world without some cause. If the village board put up a "stop and go" light where state highway No. 1 passes the Podunk school house—to the great disgust of touring motorists on a Sunday—they had some reason for spending the village funds in this manner. It is not hard to guess the reason. Probably a considerable number of these touring motorists had shown an utter disregard for the rights and even the safety of the local inhabitants in using their own Main Street. Have you ever stood with a baby carriage, on a bright Sunday afternoon, on one curb of a popular thoroughfare, wondering whether it would be the twentieth or the fiftieth or the five hundreth motorist that would have the common ordinary decency to stop and hold out his hand and let you across? I have. And so I do not feel entirely out of sympathy with the village board of Podunk if, in their resentment at the road hogs from the city, they grasp at the only remedy they know, namely a stop and go signal light, and then run it at unreasonable as well as reasonable hours.

It is quite obviously our job as engineers to find the happy medium between these extremes. We must by all means remove unnecessary irritants to traffic—both the elemental irritants of mud and of darkness and the man-made irritants of unwise restriction. We are just as much concerned in removing unnecessary irritants to those who lawfully use the highways on foot. I do not know anything much more irritating than to have a big car or truck come dashing up to a stop sign or a red light and stop squarely across the cross-walk which I as a pedestrian am desirous of using. Only a minority of drivers do this, but unfortunately the minority is not labelled and the poor pedestrian never knows just which driver is going to respect his privileges and which is going to make him jump for his life. That is one of the chief reasons why so many still prefer to jaywalk in the middle of the block where they can at least see what is coming.

### The Task of the Traffic Engineer

It is up to us as engineers, I repeat, to solve these pressing problems on the basis of equal consideration to all. Safety is the first consideration; many a traffic light is really needed for the protection of pedestrians even though not at all for expediting traffic. If used only at the hours when it is needed, such a signal or the equivalent officer, is not an unreasonable irritant. Then,

# To Those Who Know

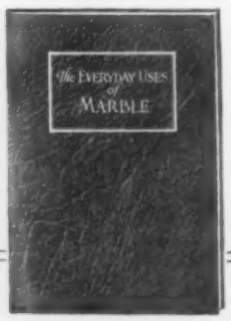
THE appeal of marble, with its beauty of intricate veining and diversity of inimitable colorings, is irresistible; but to those who know, these are but a few of the advantages of marble as a medium for interior finish.

For marble is so durable as to make it invaluable as flooring; so easy to keep clean as to make it ideal for wainscot; and so impervious to moisture as to make it the natural choice for lavatory work.

Its low maintenance cost, under all conditions, makes its use in buildings of every type—domestic, commercial or civic—a vital economy. So much so that, to those who know,

*There is No Substitute for Marble*

*This interesting booklet illustrates and tells many facts about the practical applications of marble to home and commercial treatments.*




*A copy may be obtained—without cost, of course—by merely addressing Department 11-B. It will be sent you gladly, with our compliments.*

NATIONAL ASSOCIATION *of* MARBLE DEALERS

ROCKEFELLER BUILDING · CLEVELAND · OHIO

if safety has been provided for, we, as engineers, will prescribe only such signals, devices and equipment as will expedite and not delay the traffic, both vehicular and pedestrian.

Then, having worked out our controls on the basis of engineering study and not prejudice, we must educate all the users of the highways to use them properly.

ACKNOWLEDGMENT.—From an address before the Cleveland convention of the American Road Builders' Association, January 11, 1928.

# How Many Shoppers Park Autos in Streets?

CAN parking on downtown streets during the afternoon rush hour—4:30 to 6:00—be eliminated without serious inconvenience to shoppers?. A survey made recently by the Traffic Committee of the Rochester (N. Y.) Engineering Society has proved that it can.

Less than 2 per cent of the 34,000 shoppers interviewed in one day by Rochester Boy Scouts parked their cars on the streets between 4:30 and 6:00 p.m. The number, to be exact, was 621.

The survey was made in connection with the Traffic Committee's recommendation that street parking be prohibited during the afternoon rush hour. Some merchants believed that it would seriously inconvenience the afternoon shoppers.

About 200 Boy Scouts were stationed at doorways of department stores, men's and women's clothing stores, shoe stores, jewelry stores, book stores, drug stores, provision stores, and the five-and-ten-cent stores. Of 48,700 shoppers approached by the boys, 34,233, or 70 per cent, answered their questions, and the response on the whole was entirely courteous.

A record was kept in half-hour periods of the numbers of shoppers entering the stores, with the following result:

| A. M. | Shoppers |
|---|---|
| 9:00- 9:30 | 1,022 |
| 9:30-10:00 | 1,360 |
| 10:00-10:30 | 1,753 |
| 10:30-11:00 | 1,976 |
| 11:00-11:30 | 2,565 |
| 11:30-12:00 | 2,914 |
| 12:00-12:30 | 3,087 |

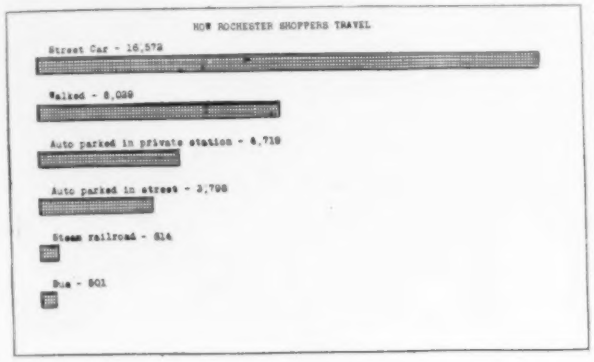
| P. M. | Shoppers |
|---|---|
| 12:30-1:00 | 4,159 |
| 1:00-1:30 | 3,316 |
| 1:30-2:00 | 3,349 |
| 2:00-2:30 | 3,266 |
| 2:30-3:00 | 3,111 |
| 3:00-3:30 | 2,812 |
| 3:30-4:00 | 2,694 |
| 4:00-4:30 | 2,508 |
| 4:30-5:00 | 2,921 |
| 5:00-5:30 | 2,990 |
| 5:30-6:00 | 2,297 |
| Total | 48,709 |

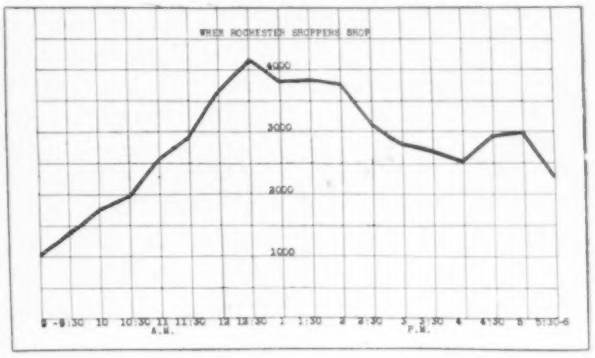
The shopping peak at noon of course represents office and factory workers on their lunch hour.

In response to the question, "How did you come downtown today?" the answers were as follows:

| | |
|---|---|
| Street car | 16,572 |
| Walked | 8,029 |
| Auto parked in private station | 4,719 |
| Auto parked in street | 3,798 |
| Steam railroad | 614 |
| Bus | 501 |
| | 34,233 |

According to this, only 11 per cent of the shoppers parked automobiles in the street, and less than 2 per cent used the streets for parking purposes between 4:30 and 6:00 p.m. In October, partly as a result of this survey, the Rochester Police Department posted the three busiest downtown streets with signs prohibting all parking between these hours. There is no question that this expedites home-going traffic, both by street car and by automobile.


HOW ROCHESTER SHOPPERS TRAVEL
Street Car - 16,572
Walked - 8,029
Auto parked in private station - 4,719
Auto parked in street - 3,798
Steam railroad - 614
Bus - 501




# Preserving the Balance Between Conservation and Development in Rural Sections

IN a notable exposition of the question of "The Preservation of Rural England," Patrick Abercrombie, Professor of Civic Design in the University of Liverpool, presented to the readers of *The Town Planning Review*, of England, a cause whose importance America is slowly coming to realize.

The tendencies toward change are rural development, urban decentralization, and motor transport. The assets to be preserved are the country towns and villages, the wild country, the special landscape features, the workaday countryside, the footpaths, rural lanes, and commons, the rivers and brooks, the trees and hedges. What has already been done and what it is still possible to do to accomplish this is set forth definitely and at length, and is summarized in the closing paragraph of the article:

"What then are the conclusions at which we are arrived? That this rural England of ours is at this moment menaced with a more sudden and thorough change than ever before owing to a variety of reasons; that it is not safe to leave these changes to adjust themselves, hoping that somehow a general harmony will result from individualistic satisfactions; that it should be possible for a just balance to be struck between conservation and development; that certain parts must be preserved intact and inviolate but that others can, after suffering a change, bring forth something new and beautiful, provided a conscious effort is made; that many and various powers exist, but not exactly shaped to the instrument required; that a cooperation of statutory authorities, voluntary bodies and the general public is necessary for effective action; that education all round is wanted—in landscape design, in appreciation of the country, and in a detailed survey of its features."

### Voluntary Park Allotments

Allotment by realtors of portions of all new city subdivisions for park, playground and community recreational purposes has been approved by action of a number of leading real estate boards within the National Association of Real Estate Boards and by a number of state associations.

The acquisition of necessary park space and the establishment of an adequate playground system are often hampered by the high cost of acquiring land for recreational purposes in growing cities, the real estate organizations point out.

# 22 *years of Trinidad Lake Asphalt!*

## This pavement has stood the wear and tear since 1906!

You can always depend upon Trinidad Native-Lake Asphalt to give real service. And Niagara Square, around the McKinley Monument, Buffalo, N. Y., is but another example of its long life and low cost of maintenance.

Twenty-two years of service—so far, and this wonderful product of nature will undoubtedly be giving satisfaction after twenty-two years more, as right in Buffalo there are other streets which have been paved with Trinidad for forty-seven years. And besides being long lasting they are attractive, resilient, noiseless, easy to keep clean and repair.

The native-lake asphalt for *road* building is Bermudez Road Asphalt—another of our products. Write for interesting data.

**The Barber Asphalt Company**
**Philadelphia**

**New York Chicago Pittsburgh St. Louis Kansas City San Francisco**

Dug from the surface of Trinidad Asphalt Lake

**TRINIDAD LAKE ASPHALT**

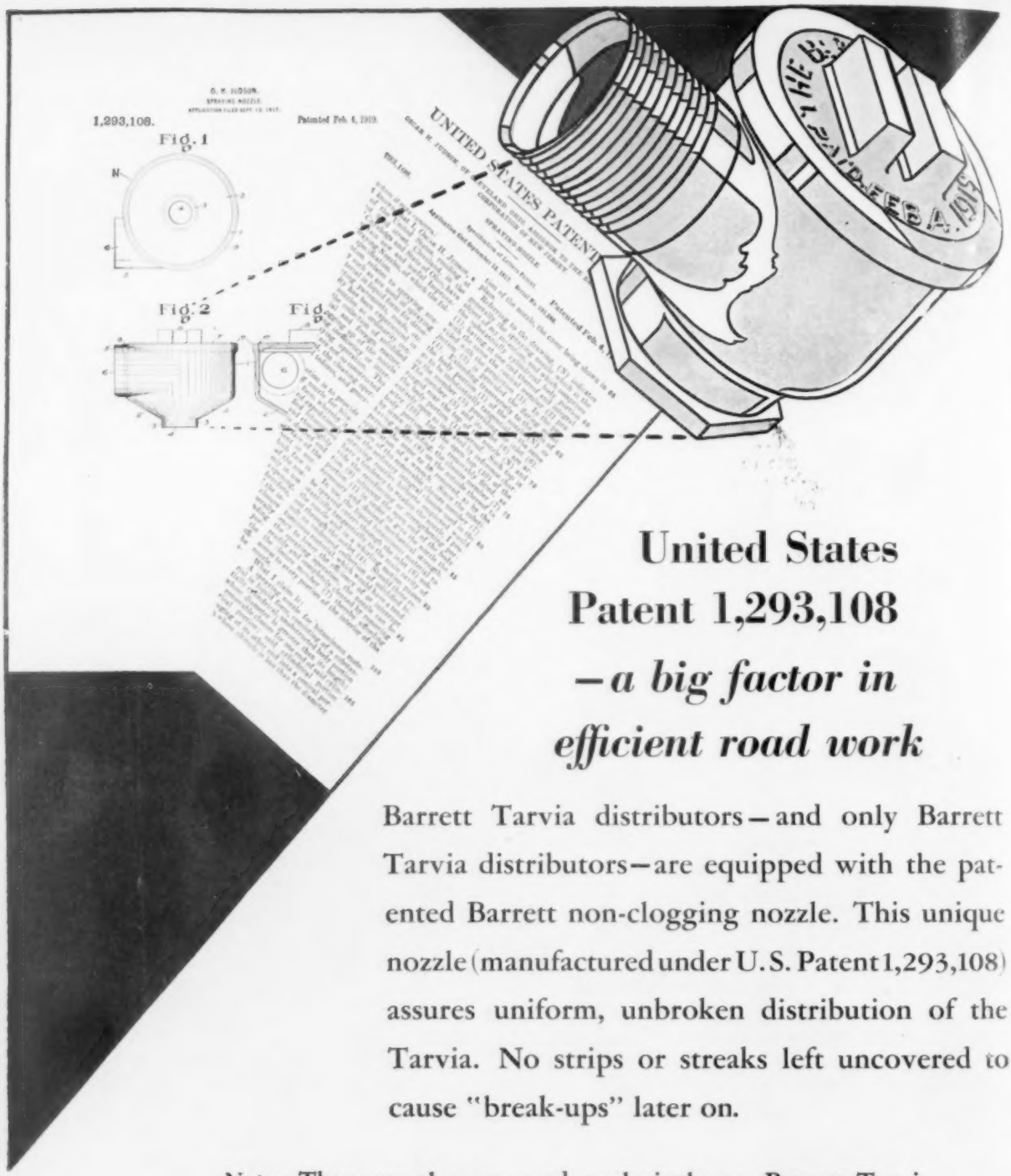
Yes—we should like you to mention THE AMERICAN CITY.

# New Population Estimates for Cities of Over 30,000

## *Department of Commerce Announces Estimates of Population by Bureau of the Census as of July 1, 1927*

THE Department of Commerce made public, on December 27, 1927, the following estimates of population for cities as of July 1, 1927. These estimates, made by the Bureau of the Census, apply to all cities having over 30,000 population in 1920 and are based in most cases on the assumption that the annual increase of population since the census of 1920 has been the same as the average annual increase between 1910 and 1920. In those states, however, which took a state census in 1925, the state figures for that are given in the first population column, and the 1927 estimates are based on the average annual increase between 1920 and 1925. Due allowance is made for any annexations or detachments of territory that may have taken place and of which the Bureau has been advised. In a few cases where there is reason to believe that owing to exceptional conditions of growth the figure thus obtained is far from correct, and also in those cases where the last Federal census showed a decrease, no estimates are made.

| Municipality | Federal Census January 1, 1920 | Estimated Population July 1, 1927 |
|---|---|---|
| **Alabama** | | |
| Birmingham | 178,806 | 217,500 |
| Mobile | 60,777 | 67,700 |
| Montgomery | 43,464 | 47,600 |
| **Arkansas** | | |
| Little Rock | 65,142 | 77,500 |
| **California** | | |
| Berkeley | 57,295 | 69,400 |
| Fresno | 45,086 | 62,200 |
| Long Beach | 55,593 | 104,200 |
| Los Angeles | 576,673 | ** |
| Oakland | 216,261 | 267,300 |
| Pasadena | 45,354 | 60,500 |
| Sacramento | 65,908 | 74,600 |
| San Diego | 74,683 | 115,300 |
| San Francisco | 506,676 | 576,000 |
| San Jose | 39,642 | 44,800 |
| Stockton | 40,296 | 49,800 |
| **Colorado** | | |
| Colorado Springs | 30,105 | * |
| Denver | 256,491 | 289,800 |
| Pueblo | 43,050 | 44,100 |
| **Connecticut** | | |
| Bridgeport | 143,555 | ** |
| Hartford | 138,036 | 168,300 |
| Meriden | 34,764 | 36,800 |
| New Britain | 59,316 | 71,200 |
| New Haven | 162,537 | 184,900 |
| Stamford | 35,096 | 42,800 |
| Waterbury | 91,715 | ** |
| **Delaware** | | |
| Wilmington | 110,168 | 126,400 |
| **District of Columbia** | | |
| Washington | 437,571 | 540,000 |
| **Florida** | State Census 1925 | |
| Jacksonville | 95,450 | 138,900 |
| Miami | ‡131,286 | 140,000 |
| Pensacola | 25,305 | † |
| St. Petersburg | ‡47,629 | 48,500 |
| Tampa | 94,743 | 107,800 |
| **Georgia** | | |
| Atlanta | 203,550 | 249,000 |
| Augusta | 52,548 | 56,200 |
| Columbus | 31,125 | 45,800 |
| Macon | 52,995 | 60,100 |
| Savannah | 83,252 | 99,700 |
| **Illinois** | | |
| Aurora | 36,397 | 46,500 |
| Chicago | 2,701,705 | 3,102,800 |
| Cicero | 44,995 | 68,500 |
| Danville | 33,776 | 38,200 |
| Decatur | 43,818 | 56,000 |
| East St. Louis | 66,767 | 73,100 |
| Elgin | ‡33,384 | 35,000 |
| Evanston | 37,234 | 46,400 |
| Joliet | 38,442 | 41,500 |
| Moline | 30,734 | 35,100 |
| Oak Park Village | 39,858 | 55,600 |
| Peoria | 76,121 | 83,500 |
| Quincy | ‡39,131 | 39,500 |
| Rock Island | 35,177 | 41,900 |
| Rockford | 65,651 | 80,900 |
| Springfield | 59,183 | 66,400 |
| **Indiana** | | |
| East Chicago | 35,967 | 49,100 |
| Evansville | 85,264 | 96,600 |
| Fort Wayne | 86,549 | 103,100 |
| Gary | 55,378 | 85,200 |
| Hammond | 36,004 | 54,200 |
| Indianapolis | 315,746 | 374,300 |
| Kokomo | 30,067 | 39,100 |
| Muncie | 36,524 | 45,800 |
| South Bend | 70,983 | 84,200 |
| Terre Haute | 66,083 | 72,700 |
| **Iowa** | State Census 1925 | |
| Cedar Rapids | 50,561 | 54,100 |
| Council Bluffs | 39,795 | 41,600 |
| Davenport | 52,469 | † |
| Des Moines | 141,441 | 148,900 |
| Dubuque | 40,996 | 41,900 |
| Sioux City | 76,411 | 79,000 |
| Waterloo | 36,771 | 37,000 |
| **Kansas** | State Census 1925 | |
| Kansas City | 116,053 | 117,500 |
| Topeka | 55,411 | 61,900 |
| Wichita | 88,367 | 96,100 |
| **Kentucky** | | |
| Covington | 57,121 | 58,700 |
| Lexington | 41,534 | 48,100 |
| Louisville | ‡305,935 | 320,100 |
| **Louisiana** | | |
| New Orleans | 387,219 | 424,400 |
| Shreveport | ‡67,641 | 78,000 |
| **Maine** | | |
| Lewiston | 31,791 | 36,100 |
| Portland | 69,272 | 77,500 |
| **Maryland** | | |
| Baltimore | 733,826 | 819,000 |
| **Massachusetts** | State Census 1925 | |
| Boston | 779,620 | 793,100 |
| Brockton | 65,343 | † |
| Brookline (town) | 42,681 | 44,800 |
| Cambridge | 119,669 | 123,900 |
| Chelsea | 47,247 | 49,000 |
| Chicopee | 41,882 | 44,300 |
| Everett | 42,072 | 42,900 |
| Fall River | 128,993 | 132,600 |
| Fitchburg | 43,609 | 44,700 |
| Haverhill | 49,232 | † |
| Holyoke | 60,335 | 60,400 |
| Lawrence | 93,527 | † |
| Lowell | 110,296 | † |
| Lynn | 103,081 | 104,800 |
| Malden | 51,789 | 52,900 |
| Medford | 47,627 | 51,300 |
| New Bedford | 119,539 | † |
| Newton | 52,003 | 56,000 |
| Pittsfield | 46,877 | 49,100 |
| Quincy | 60,055 | 65,300 |
| Revere | 33,261 | 35,200 |
| Salem | 42,821 | 42,900 |
| Somerville | 99,032 | 101,600 |
| Springfield | 142,065 | 147,400 |
| Taunton | 39,255 | 40,200 |
| Waltham | 34,746 | 36,400 |
| Worcester | 190,757 | 195,500 |
| **Michigan** | | |
| Battle Creek | 36,164 | 46,100 |
| Bay City | 47,554 | 49,400 |
| Detroit | ‡1,242,044 | 1,334,500 |
| Flint | 91,599 | 142,700 |
| Grand Rapids | 137,634 | 161,900 |
| Hamtramck | 48,615 | 93,800 |
| Highland Park | 46,499 | 81,700 |
| Jackson | 48,374 | 61,700 |
| Kalamazoo | 48,487 | 55,300 |
| Lansing | 57,327 | 75,600 |
| Muskegon | 36,570 | 45,500 |
| Pontiac | ‡54,203 | 54,000 |
| Saginaw | 61,903 | 74,400 |
| **Minnesota** | | |
| Duluth | 98,917 | 114,700 |
| Minneapolis | 380,582 | 447,700 |
| St. Paul | 234,698 | 250,100 |
| **Missouri** | | |
| Kansas City | 324,410 | 383,100 |
| St. Joseph | 77,939 | 78,500 |
| St. Louis | 772,897 | 839,200 |
| Springfield | 39,631 | 51,200 |
| **Montana** | | |
| Butte | 41,611 | 43,300 |
| **Nebraska** | | |
| Lincoln | 54,948 | 69,900 |
| Omaha | 191,601 | 219,200 |
| **New Hampshire** | | |
| Manchester | 78,384 | 84,800 |
| **New Jersey** | | |
| Atlantic City | 50,707 | 54,200 |
| Bayonne | 76,754 | 93,100 |
| Camden | 116,309 | 133,100 |
| East Orange | 50,710 | 63,300 |
| Elizabeth | 95,783 | ** |
| Hoboken | 68,166 | * |
| Jersey City | 298,103 | 321,500 |
| New Brunswick | 32,779 | 39,900 |
| Newark | 414,524 | 466,700 |
| Orange | 33,268 | 36,100 |
| Passaic | 63,841 | 70,800 |
| Paterson | 135,875 | 143,800 |
| Perth Amboy | 41,707 | 49,100 |
| Trenton | 119,289 | 136,700 |
| Union City | 60,721 | 64,000 |
| **New York** | State Census 1925 | |
| Albany | 117,820 | 119,500 |
| Amsterdam | 35,260 | 35,900 |
| Auburn | 35,677 | † |
| Binghamton | 71,915 | 73,900 |
| Buffalo | 538,016 | 550,000 |
| Elmira | 48,359 | 49,500 |
| Jamestown | 43,414 | 45,100 |
| Mount Vernon | 50,382 | 53,300 |
| New Rochelle | 44,222 | 47,300 |
| New York | 5,873,356 | 5,970,800 |
| Bronx borough | 872,168 | 926,100 |
| Brooklyn borough | 2,203,235 | 2,274,400 |
| Manhattan borough | 1,945,029 | 1,814,600 |
| Queens borough | 714,647 | 809,100 |
| Richmond borough | 138,277 | 146,600 |
| Newburgh | 30,419 | 30,400 |
| Niagara Falls | 57,033 | 66,600 |
| Poughkeepsie | 35,670 | 35,900 |
| Rochester | 316,786 | 324,500 |
| Schenectady | 92,786 | 93,200 |
| Syracuse | 182,003 | 197,000 |
| Troy | 72,223 | 72,300 |
| Utica | 101,604 | 103,400 |
| Watertown | 32,836 | 33,400 |
| Yonkers | 113,647 | 118,800 |
| **North Carolina** | | |
| Charlotte | 46,338 | 55,900 |
| Durham | ‡42,258 | 45,700 |
| Greensboro | ‡43,525 | 50,300 |
| Wilmington | 33,372 | 38,400 |
| Winston-Salem | 48,395 | 77,100 |
| **Ohio** | | |
| Akron | 208,435 | ** |
| Canton | 87,091 | 113,300 |
| Cincinnati | 401,247 | 412,200 |
| Cleveland | 796,841 | 972,500 |
| Columbus | 238,762 | 291,400 |
| Dayton | 152,559 | 180,700 |
| Hamilton | 39,675 | 43,770 |




# United States Patent 1,293,108 —*a big factor in efficient road work*

Barrett Tarvia distributors—and only Barrett Tarvia distributors—are equipped with the patented Barrett non-clogging nozzle. This unique nozzle (manufactured under U.S. Patent 1,293,108) assures uniform, unbroken distribution of the Tarvia. No strips or streaks left uncovered to cause "break-ups" later on.

*Note:* These nozzles are used exclusively on Barrett Tarvia equipment and are not for sale.

**Tarvia**
*For Road Construction Repair and Maintenance*

The Barrett Company

| | | | |
|---|---|---|---|
| New York | Chicago | Philadelphia | Boston |
| St. Louis | Cleveland | Cincinnati | Kansas City |
| Detroit | Salt Lake City | Birmingham | Lebanon |
| Minneapolis | Milwaukee | Bethlehem | Columbus |
| Youngstown | Syracuse | Toledo | Rochester |
| Baltimore | Providence | | Buffalo |

In Canada:
THE BARRETT COMPANY, Limited
Montreal Toronto Winnipeg Vancouver

| Municipality | Federal Census January 1, 1920 | Estimated Population July 1, 1927 |
|---|---|---|
| Lakewood | 41,732 | 62,200 |
| Lima | 41,326 | 48,700 |
| Lorain | 37,295 | 44,000 |
| Portsmouth | 35,193 | 40,500 |
| Springfield | 60,840 | 71,600 |
| Toledo | 243,164 | 305,400 |
| Youngstown | 132,358 | 169,400 |
| **Oklahoma** | | |
| Muskogee | 30,277 | 32,900 |
| Oklahoma City | 91,295 | ** |
| Tulsa | 72,075 | 150,000 |
| **Oregon** | | |
| Portland | 258,288 | ** |
| **Pennsylvania** | | |
| Allentown | 76,051 | 97,000 |
| Altoona | 60,331 | 67,800 |
| Bethlehem | 54,149 | 66,000 |
| Chester | 58,030 | 72,300 |
| Easton | 33,813 | 37,900 |
| Erie | 93,372 | ** |
| Harrisburg | 75,917 | 85,700 |
| Hazleton | 32,277 | 37,500 |
| Johnstown | 67,327 | 73,000 |
| Lancaster | 53,150 | 57,700 |
| McKeesport | 46,781 | 49,900 |
| New Castle | 44,938 | 51,600 |
| Norristown borough | 32,319 | 35,800 |
| Philadelphia | 1,823,779 | 2,035,900 |
| Pittsburgh | 594,277 | 665,500 |
| Reading | 107,784 | 114,500 |
| Scranton | 137,785 | 143,900 |
| Wilkes-Barre | 73,833 | 90,900 |
| Williamsport | 36,198 | 43,600 |
| York | 47,512 | 49,600 |
| **Rhode Island** | State Census 1925 | |
| Cranston | 34,471 | 36,600 |
| Newport | 27,757 | † |
| Pawtucket | 69,760 | 72,100 |
| Providence | 267,918 | 280,600 |
| Woonsocket | 49,681 | 52,300 |
| **South Carolina** | | |
| Charleston | 67,957 | 75,000 |
| Columbia | 37,524 | 50,000 |
| **Tennessee** | | |
| Chattanooga | 57,895 | 72,900 |
| Knoxville | 77,818 | 102,100 |
| Memphis | 162,351 | 178,900 |
| Nashville | 118,342 | 137,800 |
| **Texas** | | |
| Austin | 34,876 | 38,800 |
| Beaumont | 40,422 | 54,400 |
| Dallas | 158,976 | 211,600 |
| El Paso | 77,560 | 113,500 |
| Fort Worth | 111,536 | 163,600 |
| Galveston | 44,255 | 49,900 |
| Houston | 138,276 | ** |
| San Antonio | 161,379 | 211,400 |
| Waco | 38,500 | 45,700 |
| Wichita Falls | 40,079 | ** |
| **Utah** | | |
| Ogden | 32,804 | ‡38,300 |
| Salt Lake City | 118,110 | 135,700 |
| **Virginia** | | |
| Lynchburg | ‡38,493 | 38,600 |
| Newport News | 35,596 | 51,700 |
| Norfolk | 115,777 | 179,200 |
| Petersburg | 31,012 | 37,100 |
| Portsmouth | 54,387 | 60,700 |
| Richmond | 171,667 | 191,800 |
| Roanoke | 50,842 | 63,200 |
| **Washington** | | |
| Seattle | 315,685 | 375,300 |
| Spokane | 104,437 | 109,000 |
| Tacoma | 96,965 | 107,200 |
| **West Virginia** | | |
| Charleston | 39,608 | 53,400 |
| Huntington | 50,177 | 66,900 |
| Wheeling | 56,208 | * |
| **Wisconsin** | | |
| Green Bay | 31,017 | 35,500 |
| Kenosha | 40,472 | 54,600 |
| La Crosse | 30,421 | 30,400 |
| Madison | 38,378 | 48,800 |
| Milwaukee | 457,147 | 536,400 |
| Oshkosh | 33,162 | 33,200 |
| Racine | 58,593 | 71,300 |
| Sheboygan | 30,955 | 34,500 |
| Superior | 39,671 | * |

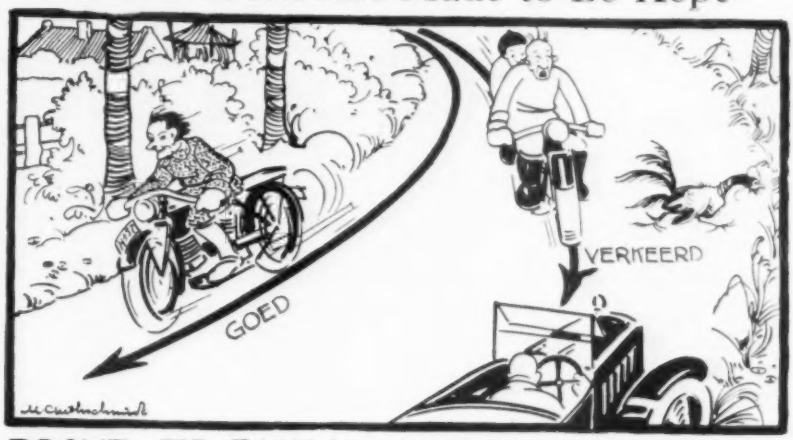
* No estimate made; population decreased 1910 to 1920.

** No estimate made; see explanation at head of table.

† No estimate made; population decreased 1920 to 1925.

‡ Special census since 1920, taken under the supervision of the Bureauof the Census.

# The Moral Is the Same in Any Language: Traffic Rules Are Made to Be Kept




BOCHT TE RUIM .....ZEER GEVAARLIJK

*VIOLATION may lead to a dreadful thing (as shown in the top illustration); or to a number of dreadful things (below). But not all elementary school courses in safety education make the hazards so dramatic as do those in the Dutch.*

*The pictures are reproduced by permission from "Veilig Verkeer," a textbook by J. J. Visser and P. P. Paul, Dutch police officials. J. B. Wolters, Groningen, Netherlands, is the publisher.*

SPREEK NIET MET DEN VERKEERSAGENT

# *PLANNED LIGHTING

*for*

# STREET ILLUMINATION

*Simplified by the use of Holophane Data Sheets*

**Planned Lighting*

is the name we have given to artificial Lighting installations planned by Holophane Lighting Engineers for specific applications, and which employ Holophane Specifics. (Holophane Symmetric and Asymmetric Refractors.)

FOR planning an installation, you will obtain valuable assistance from Holophane Street Lighting Recommendations in Data Sheet Form.

These sheets give specific information on Illumination Intensity, Location of Light Units, Mounting Height, Spacing and other requisites for attaining most economically the Ideal Street Lighting Results.

A separate sheet is available for applying Holophane Planned Lighting to any class of Business or Residence Street; Boulevard; Parkway; Avenue; Bridge; Plaza or Highway.

Any or all sheets will be sent to you on request, without charge.

HOLOPHANE COMPANY

*New York and Toronto*

# HOLOPHANE

# Automobile Fatalities Indicate Importance of Uniform Vehicle Code

THAT statistics of automobile accidents from 1920 to 1926, inclusive, demonstrate the life-saving value of well-organized motor vehicle departments with drivers' licensing systems, was pointed out by A. B. Barber, Manager of the Transportation and Communication Department of the Chamber of Commerce of the United States, in an address before the Illuminating Engineering Society, in New York, on January 11:

"An examination of the statistics of motor-vehicle accidents for the past few years will, I think, clearly show that the states that lie chiefly along the North Atlantic seaboard have a genuine accomplishment to record as contrasted with the records of the other states, particularly in the Middle West and the South. On this point I would invite your attention to the following figures: In the years from 1920 to 1926, inclusive, the north Atlantic states from Maine to Maryland show an increase of 64 per cent in automobile fatalities. The middle western states, that is, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, and Nebraska—all for which statistics are available—record an increase of 100 per cent in fatalities for the same period. The southern states, that is, Virginia, North Carolina, South Carolina, Kentucky, Tennessee, Mississippi, and Louisiana, record for this period the enormous increase of 230 per cent. Statistics for West Virginia, Georgia, and Alabama were not available for all of the years since 1920, but such figures as are available showed the same rapid increase in accidents as for the other southern states.

"The high rate of accident increase in the Middle West and the South might be thought to be explainable by a more rapid increase in motor-vehicle registrations, but such is not the case. Automobile registrations in the Middle West, for example, have not increased as rapidly as in the Northeast, the percentage of gain in the Middle West from 1920 to 1926 being 126 per cent as opposed to 158 per cent in the Northeast. In the South the registrations for the period mentioned were augmented by 194 per cent, or a fourth more than in the Northeast, but we must contrast with this the fact that automobile accidents in the South mounted by 230 per cent as against 64 per cent in the Northeast, or nearly four times as rapidly. The conclusion to be drawn is that, in general, motor traffic in the South is almost completely unbridled and, except in a few localities, is under little better control in the Middle West, whereas in the Northeast the efforts of the authorities have begun to show results. This conclusion is particularly supported by a comparison of the records for 1925 and 1926. For the Northeast the total number of fatalities was held almost even, while a number of these states, namely New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, actually registered a material reduction. Against this, nearly all of the middle western and southern states showed heavy increases in traffic fatalities.

"In considering these indications of the accident trend in the several sections, it should be borne in mind that the northeastern states are the only ones in the country which, for the period in question, that is, since 1920, have had well-organized motor-vehicle departments with drivers' licensing systems. Some other states, such as California, Arizona, Oregon, and Washington, have recently adopted such systems, but they have not been in operation long enough.

"Considering the fact that the Uniform Vehicle Code was completed only in August, 1926, and the wide differences in viewpoint in different parts of the country as to the extent to which regulation of motor vehicles and their operators is necessary, the legislative results during 1927 were very encouraging. Outside of the north Atlantic states, which already had systems of automobile administration substantially as provided for in the Code, some ten states took favorable action in 1927. North Carolina, North Dakota, and Idaho adopted all but the licensing act; Michigan, Minnesota, Washington, Arkansas, and Arizona adopted laws based on the operation of vehicles act; while California and Oregon adopted legislation supplementary to their existing laws bringing them into closer harmony with the Uniform Vehicle Code. New Hampshire also adopted supplementary legislation, while Pennsylvania adopted substantially the entire Code in replacement of its existing laws. To this list should also be added Virginia, which, in 1926, adopted an act based closely on the Code as then available in tentative form, omitting only the licensing of operators. It has been estimated that, as a result of the year 1927, more than 25,000,000 people were brought under new motor laws based on the Uniform Code, and that, together with the people of the northeastern states, nearly one-half of the population of the country have now traffic laws showing a material degree of uniformity."

# National "Cleanest Town" Contest Announced

UNMISTAKABLY, there is a newly aroused general aliveness to civic beauty and its importance in all phases of community life. Literally hundreds of chamber of commerce committees, civic clubs, and women's clubs in smaller towns have become keenly interested in the physical improvement of their municipalities. They have wanted precedent in making programs. They have sought details of what other communities, embarking on "beautifying campaigns," have been able to accomplish, and how, and through what combinations of local agencies.

To stimulate and aid this worth-while movement, Mrs. Dolly Dean Burgess, of Helena, Mont., Chairman of the Division of Community Service, General Federation of Women's Clubs, has enlisted the cooperation of the National Clean Up and Paint Up Campaign Bureau in a nation-wide 1928 "Our Town Clean Up and Beautify Campaign." A handsome loving-cup will be presented to the prize-winning community in each state, awards to be based upon the amount of progress made rather than upon generally excellent conditions. Announcements of awards will be made, and the states' cups presented by the Governor or some other high state official where that proves possible, on October 1, 1928.

Mrs. Burgess has addressed campaign announcements not only to women's clubs, but to all "public-spirited organizations, officials and individuals of every community. The campaign, it is urged, is for everybody's benefit, and needs everybody's aid. Complete information for the organization and conduct of the local campaigns will be sent upon request to the National Clean-Up and Paint-Up Campaign Bureau, 243 West 39th Street, New York.

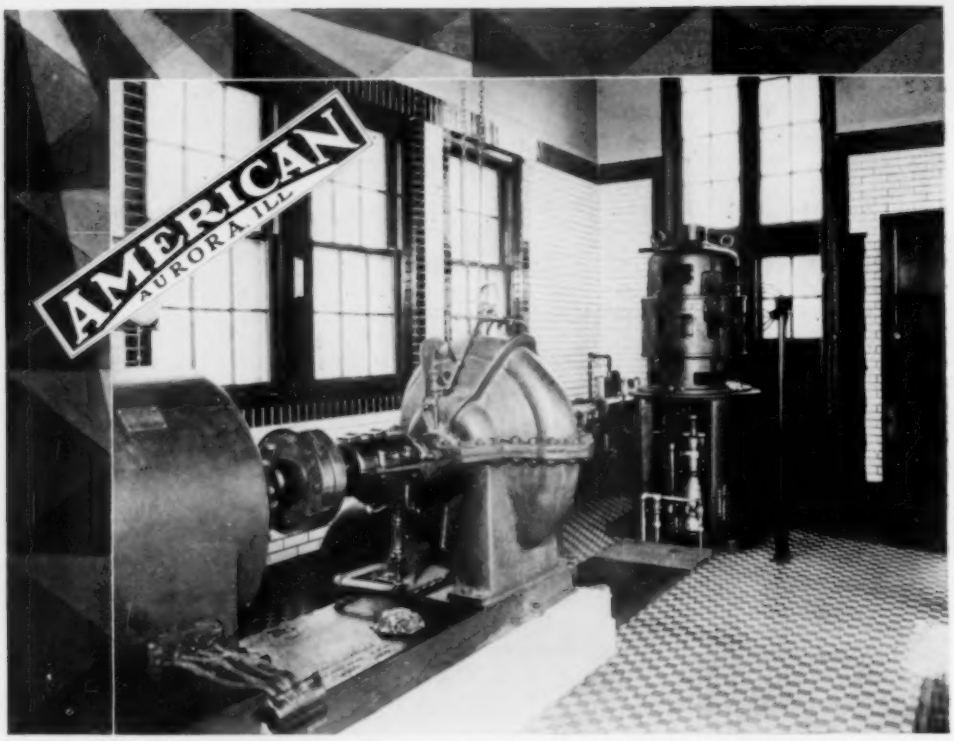
In connection with the publicity of this campaign, announcement is made of a new motion picture, "In Humanity's Service,," prepared especially to show a local campaign for cleaning up and beautifying the home town. A limited number of copies of this film are available at the nominal rental of $5, through a non-commercial organization, The Eastern Film Corporation, 220 West 42nd Street, New York. The running time of the film is about 15 minutes.

# School Health Service Cuts Tax Rate

"I ONCE had occasion in reorganizing the health department of the Boston city schools to recommend appointment of a school nurse for each district. The physicians objected on the ground that the schools might do some things that should be done by the physician. The big taxpayers objected on the ground of increased expense.

"To the physicians I said that all those who knew the value of health and could afford it were already coming to the physicians, and that the others would come as soon as we had taught the younger generation that it was possible and important to be healthy and comfortable. Two years later they were gracious enough to report that my prophecy had already come true, and at the same time I was able to report to the taxpayers that looking after the health of the children had reduced the number of those failing to pass to such an extent that the savings exceeded the entire cost of the nursing service."

—From a paper on "The Philosophy of Public Health Service," read at the recent Semi-Centennial Celebration at Springfield, Mo., by President Stratton D. Brooks of the University of Missouri.




# "American" Pumps at Sioux City, Iowa

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Tulsa, Okla. — Charlotte, N. C.
Denver, Colo. — Pittsburgh, Pa.
St. Louis, Mo. — Roswell, N. M.
Omaha, Neb. — Philadelphia, Pa.
Birmingham, Ala. — Kansas City, Mo.
St. Paul, Minn.

THERE are four stations upon which Sioux City, Iowa, depends for its municipal water supply.

Above is pictured the interior of one of these stations, which is typical of the four. Station number four has for pump equipment an "American" deep-well turbine with a capacity of 1600 G. P. M. when pumping against a total head of 85 feet at a speed of 1155 R. P. M. This turbine is driven by a 170 H. P. vertical slip-ring motor and pumps directly into the suction of the "American" 8-inch two stage horizontal split shell centrifugal pump, shown in the foreground. This horizontal pump is driven by a 150 H. P. horizontal slip-ring motor.

Station number one was installed in 1915 and station number four, pictured above, was installed in 1922. All of the four stations are equipped with "American" pumps.

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# MUNICIPAL ACCOUNTING AND FINANCE

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*Member of the Firm of Searle, Oakey & Miller, New York*

# Personnel Administration—An Outline of Principles

MANY systems of salary standardization have been devised for the purpose of equalizing salaries by designating each position and grade to be filled and fixing for each position a maximum and minimum rate of pay. Some of these systems have included specifications of experience and qualifications. Some of the civil service commissions of states and cities have devised and adopted such systems, one of the most notable being that of New York City.

The advantage in such systems is that they prevent certain abuses which were widespread in the past; for example, the employment of persons wholly unqualified for the work to be done; also promotion, demotion and discharge of persons for purely political reasons. But these are negative advantages which are to a certain extent offset by the disadvantages of confining executive discretion and of making the employee something of a machine.

Broadly speaking, there should be one main purpose in the administration of personnel—to save labor. By saving of labor we mean not merely the elimination of unnecessary labor to the advantage of the employer, but the application of the labor that is performed in an effective manner, which results in advantage to the employee as well as to the employer. Stated another way, every human being in reasonably good health constitutes a resource, by reason of his or her capabilities for the performance of labor; if an individual's efforts are directed in an ineffective manner, so that the results of his labor are meager or defective, then there is a waste of labor which is not only a detriment to the employer but also to the employee and to the community.

A mere fixing of rates of pay and the mere adoption of rules of employment and discharge, which are in reality the main features of most systems of salary standardization, are of little use in achieving the main purpose of personnel administration, which is the saving of labor. Other measures are essential, namely:

(1) Effective leadership on the part of the executive
(2) The training and education of the employee
(3) Sound methods for the effective selection, promotion and discharge of employees
(4) Fair pay

### Leadership of the Executive

We have noted as the first essential the matter of leadership. This is due to our belief, based on practical experience and observation, that the inefficient executive is the chief cause of an unsatisfactory personnel and consequently of the waste of labor. According to our observation, the great majority of executives have neither natural talent for nor training in the administration of personnel; they are often well trained in other matters, particularly the technique of the business with which they are concerned. Most large corporations have an employment or a labor department which is often efficient in the selection of applicants for positions. This work, while important, is merely the first step; the successful applicant is turned over to some departmental executive who knows how the work for which he is responsible should be done, but often has little of the knowledge or ability required for training and developing the personnel under his direction. Consequently, the first step required in order to establish effective administration of personnel is to educate the executive. This education should begin by a conference of all departmental heads in order that they may be instructed as to the principles of personnel administration which are to be adopted. While these principles vary in minor details according to the policy of the corporation, in their main features they should be the same in every case. These features are as follows:

### Principles to Be Adopted

(1) The first requirement is that the executive must obtain and retain the complete confidence of his subordinates; this means, first of all, that he must be thoroughly trained in the technique of the work for which he is responsible and to such a degree that his subordinates unconsciously recognize this fact.

(2) He must be sincere in his relationships with his subordinates.

(3) There must be no favoritism whatever in the selection, promotion or discharge of employees or in the adjustment of their salaries or in the assignment of work; it requires but one instance of executive action based on favoritism to destroy morale. In short, there must be no exceptions to this principle.

NOTE.—*If an executive does not meet the test of the foregoing three principles, he is unfit and as long as he remains in his position, effective administration of personnel under his direction is impossible.*

(4) The work to be done must be determined not only as to the various operations to be performed but as to the volume of each operation.

(5) The number of employees of each designation and grade required to perform the volume of work in each operation must be determined. (By designation is meant, for example, bookkeeper, stenographer, typist, etc.)

(6) The qualifications of each position and grade must be determined in view of an exact knowledge of the character of work to be done.

(7) The maximum and minimum salary should be determined for each position and grade, such limits being sufficiently far apart to permit the exercise of executive discretion in the fixing of salaries.

(8) The qualifications of all positions, together with the maximum and minimum salary fixed for each, should be typewritten or printed and placed in the hands of every employee.

NOTE.—*This is one of the most important requirements for effective personnel administration in a large organization.*

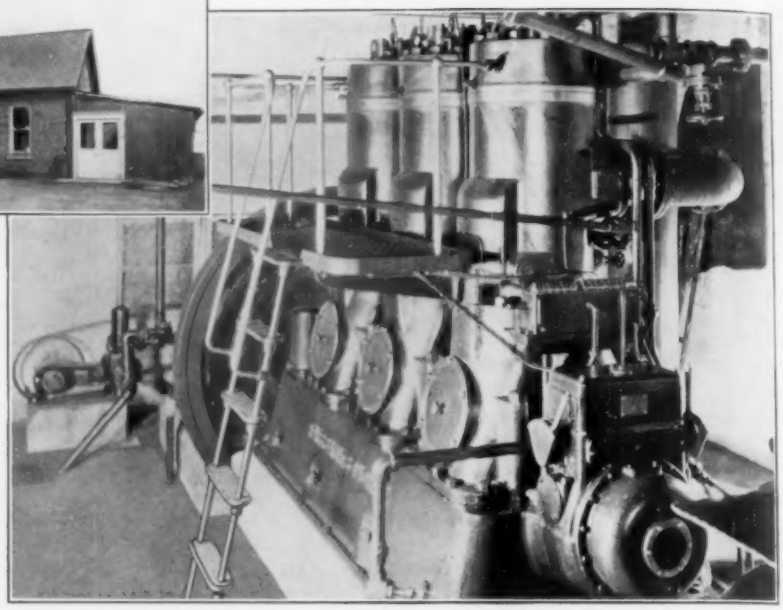
(9) A system of practical education and training should be designed and put into effect, and this system should be directed by the departmental executives, not by the so-called educational or welfare department that is not uncommon.

(10) A practical system for recording the performances of employees should be devised and adopted, not as a governing instrument in the administration of personnel, but merely as a guide to executive discretion.

(11) A definite date should be set each year for the consideration of promotions and salary adjustments and on this date the record of every employee should be considered; each department head, in conference with his division chiefs, should go over the record of each employee in his department.

(12) The next step should be the sub-

Municipal Power Plant at Arlington, Ohio, and one of the F-M Diesel units that has made this plant a self-paying success.



# A municipal plant built with F-M Diesel profits

Arlington, Ohio, is another city that has done a big thing with F-M Diesels.

Back in 1923, this city's powerhouse equipment consisted of a gas engine belt-connected to an alternator—and the lights were off at eleven o'clock.

The city officials were convinced that a modern plant would be a boon to the city—but the treasury was without funds for expansion. Nevertheless, the city installed a 50-hp. F-M Diesel generating set, arranging terms that would enable them to pay for the new equipment out of their present and estimated increased revenue. They were not wrong. With better service their revenue increased. To keep up with demands they added, in 1926, another F-M Diesel-generating set—120 hp.—and again a 180-hp. F-M unit in 1927. The gas engine equipment was discarded. The city had a completely Dieselized plant, providing 24-hour service—modern—profitable—efficiently managed.

Within the short space of four years, the revenue of the plant had been increased 350 per cent. The savings due to Diesel operation had permitted the city to pay for new equipment as the plant expanded. All this had been done without obligating the taxpayers—and on practically the same rates as charged by other municipalities in the state.

A brilliant achievement in municipal plant management—to start from practically nothing, and to have, in only four years, as modern and profitable a plant as any city could desire! Yet hundreds of other cities have proved that this is not difficult to accomplish, when the problem is solved with Diesel power. For stories of other municipal plants to which the Diesel has brought outstanding success, write for our interesting book—"Municipal Power Plant Developments."

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mission by department heads of their recommendations for salary adjustments to a central salary committee, which committee should have final authority.

(13) Each department head should have sole authority in respect to the selection, promotion and discharge of employees wthin his department.

NOTE.—*In any case in which this authority is considered too great to delegate to a department head, that department head is incompetent to fill his position; without such authority, effective administration of personnel within a department is impossible.*

(14) A rule should be adopted that every decision of a department head relating to a promotion, adjustment of salary or discharge of an employee must be open to correction by the department head himself upon satisfactory facts being brought to his notice by the employee involved; in case such appeal is denied or in case, such appeal having been granted, the decision in the case is not satisfactory to the employee, the employee should have the right to appeal to the chief executive if he desires.

(15) There must of course be standard regulations in respect to prompt attendance, sick leave, vacation, orderly conduct, etc.

The foregoing constitute some of the fundamental principles that are essential to effective administration of personnel. The principle which outweighs all the others in importance is that which relates to the effective selection of executives; therefore, the chief executive who desires an effective administration of personnel and the consequent saving of labor should first examine his departmental executives to ascertain whether they are fit for their positions. This should be followed by frequent meetings of all executives with the chief executive for the purpose of discussing personnel problems and of carrying out the established general policy relating to this subject. The next most important feature is the education and training of the employee and the guidance of the employee as to the steps that he should take in order to qualify himself for promotion, so that he will visualize a career for himself and not look upon his position as merely a job for his immediate support.

### The Use of Specifications of Positions, Grades, and Salaries

Labor is seldom purchased or sold at a fair price based on an exact knowledge of work requirements and the capacity and ability of the worker. In the trades, for instance, the unions, by means of concerted action, have prevented the free operation of the law of supply and demand. The application of these methods does not result in fair pay to the individual. In the professions other factors predominate; compensation is based on what the traffic will bear, on custom, locality, on reputation, etc. In governmental service the governing factors are strangely unrelated to the value of the services rendered; the compensation is sometimes fixed by very old laws or by new laws passed by legislators who have little comprehension of the work to be done.

In the employment of clerical and other similar forms of labor, systematic or even intelligent methods for fixing fair rates of pay are rare. The employer often does not know exactly the character and grade of service required and it is rare that he has determined the volume of work to be done. Consequently, he cannot fix a fair rate of compensation for the services he desires nor can he appraise the ability and capacity of the employee. Thus, the employer has no sound basis for fixing or adjusting salaries, selecting applicants for employment, filling vacancies and making promotions. In disposing of these problems he often depends upon such facts as the number of dependents of the employee, the employee's length of service, the date of the employee's last raise and the amount thereof. The result is, his conclusions are based on considerations which have no true relation to the work to be done and the qualifications of the worker.

In considering the value of his services in the position which he occupies, the employee's mental processes are generally less systematic and intelligent than those of the employer. His first difficulty is his ignorance of the exact requirements and duties of his position. He does not know what is expected of him, since these requirements have not been defined exactly by his employer. Lacking these definitions, he cannot form an opinion as to the value of services properly performed in his position. Moreover, he does not know what constitutes proper performance. Without definition of duties or standards of performance, a fair opinion as to the fairness of the pay he receives for the work which he does is impossible. Add to these conditions the usual effort of the management to keep the payroll secret, and we have the employee in a state of ignorance, uncertainty, and even suspicion, which makes his progress difficult, undermines his morale, and renders his work inefficient.

### Establishing Frankness and Understanding Between Employer and Employee

How can these unfortunate conditions be remedied? Obviously, by establishing a state of complete frankness and understanding between employer and employee. To accomplish this end, the foundation is laid by a step which must be taken by the employer, namely, the definition of the duties and qualifications, and the specification of the salary to be paid in each position. These definitions constitute specifications of positions, grades, and salaries, and when written with exact knowledge of the work to be done, become a most important instrument in the administration of personnel.

In order to be effective, these specifications must be written in detail after a painstaking survey and consideration of each position. They must be complete—that is to say, they must specify every duty and must describe every qualification of each position. They must be expressed in exact and simple language, so as to preclude misunderstanding. The importance of these requirements cannot be overstated; in fact, it is believed that unless specifications are complete in detail and exact in definition, they are of little value and sometimes do more harm than good. Also, specifications written in general terms are practically useless. On the other hand, specifications properly prepared and written produce extraordinary results.

### Placing the Specifications in the Hands of All Employees

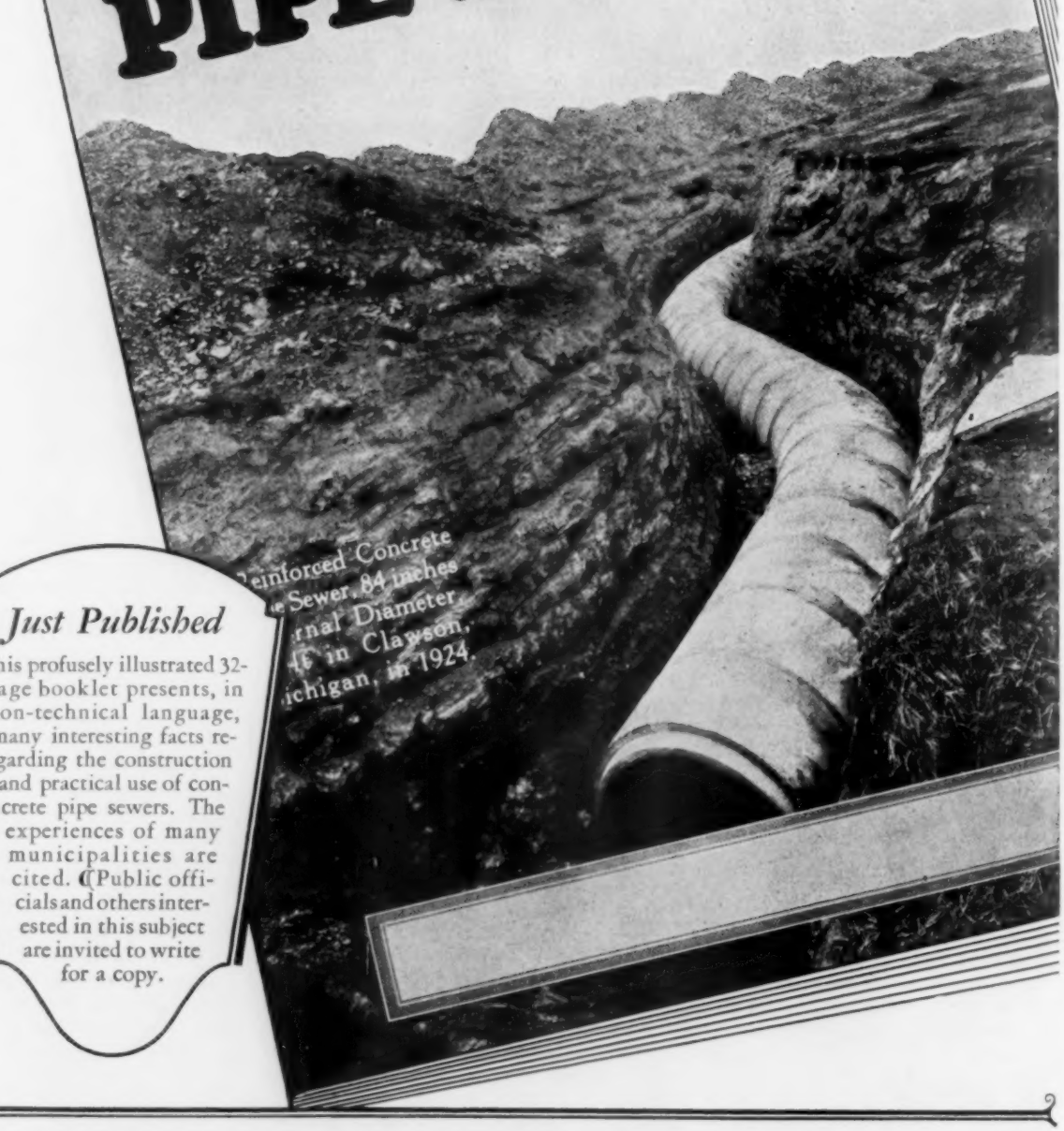
When completed, the specifications must be placed in the hands of all employees. It is not sufficient for each employee to receive the specifications of merely his position—he must be given the specifications of all positions.

The effect of this step upon the employee is far-reaching. For the first time he finds out definitely what the management considers the duties and qualifications of his position to be—in short, what is expected of him. He also discovers what the management considers his job to be worth when properly performed. He can then determine whether he is deficient in any of the duties of his position, whether he is lacking in any of the qualifications, and whether he is fairly paid. If he finds he is deficient, he can take steps, with the guidance of the management, to correct his deficiencies. If he finds he is paid less than the standard, he can ascertain the causes and correct them. If he finds he is paid more than the standard, he can determine with the aid of the management the steps he must take to advance to a position in which he can earn his pay.

Probably the most important effect of placing such specifications in the hands of employees has not been stated. It is this: for the first time in his life the employee is informed definitely what the requirements are for promotion. If he is already well qualified for the position which he holds, he can take steps immediately to qualify himself to fill the position next above his, so that when an opening occurs he will be ready.

In order to assist the employee to qualify fully for the position which he occupies and then for the position next

# CONCRETE PIPE SEWERS

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This profusely illustrated 32-page booklet presents, in non-technical language, many interesting facts regarding the construction and practical use of concrete pipe sewers. The experiences of many municipalities are cited. ¶Public officials and others interested in this subject are invited to write for a copy.

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above his, a program of practical education must be instituted by the management. Above all, this program must be intensely practical, directed and confined to the work in hand.

### Minimizing Favoritism and Internal Politics

There is, finally, another very important result of these measures. The man in charge begins to be a real executive instead of a guesser in the administration of personnel. He begins to think in the right way, to use the right standards and, therefore, sound judgment in the selection of applicants, in the promotion of employees, and in the adjustment of salaries.

By this system all the old, time-worn methods of secrecy, bargaining, and internal politics are removed as far as possible. The facts are brought out into the light of day where all can see them and take steps to solve the common problem of the employer and the employee.

The foundation is thus laid for giving the employee what he most desires—fair pay and a square deal for promotion.

*Prepared by*
FRANK B. WILLIAMS
*Author of "The Law of City Planning and Zoning"*

# ZONING NOTES

*From Data collected by the Zoning Committee of New York (233 Broadway)*

### Recent Zoning Decisions

Iowa.—*Rehmann v. City of Des Moines*, 215 N.W. Rep. 957. The council of a municipal corporation, in attempting to revoke a building permit previously granted, acts within the police power bestowed on the city and within the city's governmental powers, and for acts of municipal officers in wrongful revocation of a permit and attempted enforcement thereof the city is not liable to the owner in damages. Nor are the individual members of the council so liable, not having been shown to have acted maliciously, corruptly or dishonestly.

New York.—*Matter of Serlinsky (Kleinert)*, Supreme Court, Kings County, reported in *New York Law Journal*, December 6, 1927. "Even if in arriving at a proper disposition of the charge brought against the present petitioners the magistrate decided that they were actually engaged in the operation of a coal yard on the premises in question prior to the use change of the district including the said premises, such disposition of a criminal charge is not binding as a matter of law upon the superintendent of buildings who has refused to issue a certificate permitting the petitioners to occupy the premises as a coal yard."

New York.—*People ex rel. Metz. v. Asher*, Supreme Court, Nassau County, reported in *New York Law Journal*, November 15, 1927. "While ordinarily it is presumed that public officials are acting within the scope of their authority and for the best interests of their community, where it appears that an effort is made to change a zoning district from residential to business use and where nothing is formally shown that such a change is pursuant to a 'well-considered plan' and for the best interests involved, where, on the other hands, there is a conflict of statement as to the uses for which the section has been used and is best suited, the Court can make proper determination only upon competent proof in the form of sworn testimony, etc., which can be obtained upon a reference ordered for such purpose."

New York.—*Wilkins v. Walsh*, Supreme Court, Kings County, reported in *New York Law JoJurnal*, December 21, 1927. Where a variance can be claimed only on the ground of practical difficulties or unnecessary hardship, it can be granted only on evidence in the record of the existence of such difficulties or hardship. *People ex rel. Fordham M.B. Church v. Walsh*, 244 N. Y. 280 (formerly summarized in these Notes) followed.

Oklahoma.—*City of Muskogee v. Morton*, 261 Pac. Rep. 183. An ordinance of a city prohibiting the erection of a gasoline filling station within a certain district of such city without first obtaining the written consent of the owners of two-thirds of the property estimated by front footage thereof, lying within 300 feet of the proposed station, is not invalid by reason of such provision.

### Recent Zoning Literature

The annual report of the National Capital Park and Planning Commission for 1927 contains a review of the operation of the zoning provisions for the District of Columbia since their passage, March 1, 1920.

### The Meaning of the Zoning Constitutional Amendment in New Jersey

E. A. Merrill, Esq., of Westfield, N. J., on December 20, 1927, published a pamphlet entitled "The Meaning of the Zoning Amendment." Of the greatest immediate importance in New Jersey, the questions it discusses, and the many other considerations it suggests merit the thought of students of zoning in every state which has a constitutional amendment with regard to zoning or contemplates the passage of such an amendment.

Students of zoning have always seen the disadvantages of constitutional amendments granting state legislatures the power to pass zoning enabling acts. Zoning is an exercise of the police power, which has been expanded by the courts in accordance with public needs and public opinion. An extension of the police power by constitutional amendment necessarily stereotypes it, and prevents its free growth in accordance with future public needs.

Such an amendment is also extremely hard to put into proper words. This difficulty was felt in New Jersey before the passage of its amendment. The trouble now is to determine what it means. The Legislature already possessed the police power. Does the amendment signify that all enabling legislation and all zoning ordinances passed under it purporting to deal with zoning are valid, and the Courts have no power to pass upon their reasonableness? If not, the amendment would seem to be a solemn declaration of the people that they regard zoning as a great public need, demanding, as such, the respect of the Courts. This is apparently the effect of the Massachusetts amendment. That amendment does not give the power to zone land. It follows that land can be zoned in Massachusetts only by virtue of the law as it exists independent of the amendment. Land *is* zoned in Massachusetts, and if this power not given by the amendment can be exercised independently of it, why not those powers which it does include?

It is not intended in this brief note to discuss the question whether or not in some cases zoning constitutional amendments are expedient, but merely to call attention to the situation in New Jersey, which certainly seems to show that such amendments should be a last resort.

### A Township to Zone in Preparation for Rapid Transit Development

Abington Township has decided to start a zoning system in preparation for the development which the opening of the Broad Street Subway is expected to bring.

The Commissioners have authorized the immediate appointment of a zoning commisson of five members, which is the first step necessary under the State law of 1923. Passage of ordinances will be the next step.

At present the township has an assessment valuation of $19,900,000 and a population approximately of 15,000.

The resolution authorizing the appointment of the commission cites the 1923 statute and necessity of appointment of the zoning commission before any ordinances regulating the location, construction and use of buildings, size of courts and open spaces, density of population and use of land can be made effective. The commission will recommend boundary lines of the zoning districts, and all regulations to be enforced in those districts.—From the *City Club News*, Philadelphia, December 21, 1927.

# RUST *destroys* Expensive Pavements

EVERY city, town and village boasts of its streets and sidewalks. Citizens point with pride to such improvements. When water service pipes which carry the water into the homes are made of corrodible metal they soon become rust clogged. The result is that when the home owner turns on a faucet only a tiny trickle of reddish water drips. The rusting service pipe soon bursts. Streets and lawns must then be torn up so that necessary repairs can be made. All of which results in a heavy financial burden to the taxpayer.

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# THE CITY'S LEGAL RIGHTS AND DUTIES

*Conducted by* A. L. H. STREET, *Attorney at Law*

# Puzzling Questions of Municipal Liability

**Cities' Immunity from Liability for Negligence in Operating a Fire Department**

When fire apparatus was withdrawn from the site of a fire in Hartford one evening, a "dry line" of hose coupled to a hydrant was left lying across a sidewalk for sudden use in case the fire should break out again. This caused a slight obstruction, an inch or two high, and plaintiff stumbled over it and was injured.

The Connecticut Supreme Court of Errors decided that plaintiff's suit for damages was properly dismissed, because the accident occurred in the course of the city's exercise of its governmental functions. (Vezina vs. City of Hartford, 138 Atlantic Reporter, 145.) The Court observed:

"Obstructions placed in a highway by a municipality for the public benefit will not in any event make the highway defective unless they unreasonably obstruct or endanger public travel."

**Village Held Not Liable for Careless Operation of a Shooting-Gallery**

A bullet rebounded from a target in a shooting-gallery in a public street and struck a pedestrian. He sued the village in which the accident occurred, but the Court of Appeals for Wayne County, Ohio, ruled that there was no liability. The Court held that the village was not liable for careless operation of the place, even though the municipal officers permitted it to be set up and failed to adopt and enforce regulations appropriate to public safety. (Kreiger vs. Village of Doylestown, 158 North Eastern Reporter, 197.)

**City Held Liable for Ice Falling from a Cornice Overhanging a Public Sidewalk**

Mention has previously been made in these columns of a decision of the Appellate Division of the New York Supreme Court, in the case of Klepper vs. Seymour House Corporation, 218 New York Supplement, 476, to the effect that the city of Ogdensburg was not liable for injury to a pedestrian, caused by fall of ice from the cornice of a building fronting upon a public sidewalk. The Court decided that, although the cornice overhung the street 16 to 20 inches, the city was not liable because it had no right to go upon the private property to abate the condition. But, on further appeal being taken to the Court of Appeals of the state, the decision was reversed. (158 North Eastern Reporter, 29.) The higher Court observed.

"The slide from the slanting ledge of snow and ice into the street had happened so many times that the city must have known of the dangerous situation. Its public officials had notice of it. The policeman reported it. The duty rested upon the city to keep this sidewalk reasonably safe for pedestrians. It was an active duty, requiring vigilance and diligence. Even if no portion of the building projected over the highway, yet substances falling from the building into the highway, making it unsafe and dangerous, would require some safeguard or protection from the danger."

**City Held Liable for Removing Lateral Support of Private Property in Grading a Street**

Concerning the right of an abutting property owner to damages for the removal of the natural lateral support of the soil of his land in the grading of a street, the West Virginia Supreme Court of Appeals said in the recent case of French vs. City of Bluefield, 139 South Eastern Reporter, 644:

"While there is a sharp conflict in the authorities upon the question whether a property owner is entitled, as against a municipality, to the lateral support of the soil, the weight of authority is to the effect that the city is liable for any impairment of the property holder's lateral support. . . .

"It is no defense that the excavation was necessary for the purpose of grading the street. If the city desires greater rights than those possessed by private owners, it must acquire them by the exercise of eminent domain. It must either do this, or else itself substitute other lateral support in place of the soil which it removed."

There was no material change of grade in this case, and, therefore, the Court held that plaintiff could not recover damages for any inconvenience caused to his ingress and egress by the change. But the Court held that, for removal of lateral support of his soil, the proper measure of damages was the difference between the value of the property immediately before and immediately after the street improvement was made.

**Whether City Fulfilled Duty as to Strengh of Guard-Rails on Bridge Held to Be Question for Jury**

A bridge in Toledo is wide enough in its driveway to enable three or four cars to pass abreast. Five-foot sidewalks are maintained on each side, elevated three inches above the driveway. On the outer sides of the bridge are railings. A motorist driving across the bridge suddenly applied his brakes in a traffic emergency. His car skidded upon and across one of the sidewalks, crashed through the railing, and fell 50 feet to a river below. He sued the city for damages, but the jury found against him. Upholding the decision, the Court of Appeals for Lucas County, Ohio, said in the case of Tillman vs. City of Toledo, 157 North Eastern Reporter, 120:

"It was not the duty of the city to maintain a guard-rail of sufficient strength to prevent automobiles from plunging off the bridge; the railing being intended for pedestrians.

"The obligation of a muncipality in refence to its public ways is well stated in Drake vs. City of East Cleveland, 101 Ohio St. 111, 127 N. E. 469, and that duty only requires it to keep them in a reasonably safe condition for public travel in the usual and ordinary modes. This duty would extend to the bridge involved in this litigation, and whether the duty was fulfilled was a question for the determination of the jury upon the evidence."

**City Held Liable for Damage Caused by Street Cleaner Moving a Truck**

A street cleaner in New York unauthorizedly undertook to move a truck to facilitate the removal of ashes from a house. He was a more proficient starter than stopper and the truck crashed into a reta ning wall. Awarding judgment in favor of the owner of the wall, the New York Municipal Court held that the city was liable on the theory that the act was performed in the course of the cleaner's employment, although done in disregard of regulations of the street-cleaning department. (New York Central Railroad Company vs. City of New York, 222 New York Supplement, 757.)

**Town Exonerated from Responsibility for Collision on Highway Caused by Smoke from Burning Garbage**

In Massachusetts there is a statute making towns liable for accidents to travelers on highways due to defects or want of repair in highways. In the case of Earle vs. Inhabitants of Town of Concord, 157 North Eastern Reporter, 628, decided by the Massachusetts Supreme Judicial Court, plaintiff failed in an attempt to recover damages caused by a collision between his car and another car on a highway which was clouded by smoke from burning garbage on land abutting upon the highway. The Court remarked:

"The dump from which it is alleged that the smoke came in the case at bar was not within the limits of the highway and did not arise in connection with the construction or use of the highway. It was nothing which the town operated through its servants. Without undertaking to frame a comprehensive definition of a defect or want of repair as those words are used in the governing sections of the statute, it is enough to say that no such defect or want of repair is set out in the present declaration. . . . The case is quite distinguishable from cases . . . where an overhanging awning, a sagging wire, a protruding limb of a tree, or such physical obstructions, have been held to be susceptible of being found to be defects."

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# Sundry Items of Municipal Law

### City Cannot Levy Taxes Unless the Power Be Clearly Conferred

A Kansas City ordinance levying a yearly license tax of $25 upon architects employing one draftsman and $50 upon those employing more than one draftsman, was held by the Missouri Supreme Court to be void in the case of Siemens vs. Shreeve, 296 South Western Reporter, 415. It was decided that neither the city's charter nor the state statutes authorized taxation of architects. The Court said:

"It is conceded that the license tax here sought to be imposed is an attempted exercise of the taxing power, and not a police regulation. A city has no inherent power to tax. This power rests primarily in the state and may be delegated by constitutional provision or by statutory enactment. The authority to tax must be expressly granted or necessarily incident to the powers conferred, and in case of doubt the power is denied. . . . The taxing power here sought to be exercised is not conferred upon Kansas City by any statute. If authority therefore exists, it must be found in the charter."

### Factors in the Fixing of Reasonable Water-Rates

In the case of Public Utilities Commission vs. East Providence Water Company, 136 Atlantic Reporter, 447, the Rhode Island Supreme Court reached the following, among other, conclusions, in passing upon the reasonableness of a schedule of rates filed by the company:

A schedule increasing domestic and industrial rates 50 per cent and advancing hydrant rentals from $20 to $129 "calls for a very careful consideration of the grounds upon which the advance is made," but these increases are not necessarily unreasonable.

A 5 per cent return to a water company, based on a valuation of its property at the cost of reproduction less depreciation, is fair. Former losses and gains are to be disregarded.

The company must stand the loss of extending its water-mains through a sparsely settled district on failure to receive expected business.

Hydrants supplied by a town are not to be included in an inventory of the company's property.

### Slot Machines Involving Chance Not Saved from Illegality Because Giving Certain Return

A slot machine constituted an unlawful gambling device where it afforded a chance to win trade chips on succeeding plays, although a package of mints was secured by placing a nickel in the slot, held the Wisconsin Supreme Court in the case of City of Milwaukee vs. Johnson, 213 North Western Reporter, 335. The Court cites similar conclusions reached by the appellate courts of Arkansas, Georgia, Indiana, Mississippi, Missouri, New Jersey, New York, North Carolina and the District of Columbia. The Court said:

"The defendant contends that the machine is not a gambling device which violates the provisions of the ordinance here in question, because every player who deposits 5 cents in the slot is entitled to receive mints vended by the machine, which are alleged to equal the value of the nickel deposited in the machine. If this were the whole story, there would be much force to this contention. But the fact is that the player not only receives a package of mints, but he also has the chance of placing himself in a position where his next succeeding play will assure him of a return of several times the value of his 5-cent piece. It is this chance of receiving something for nothing which appeals to the cupidity of human nature and to the gambling instinct possessed by human beings. The machine is so designed as to induce the player to deposit his coin for the purpose of ascertaining what he will receive in return for coins thereafter deposited. It is this element of chance involved in the second succeeding operation of the machine that is the soul of the transaction which attracts the player and makes the machine a gambling device."

### Granting a License for a Gasoline Pump on a Curb Line Was Discretionary with Municipal Authorities

Two gasoline pumps had been maintained outside an automobile shop in Princeton, N. J., but abolition of the roadway on the side of which they were located made it desirable to move the pumps to points along the curb of the sidewalk in front of the shop. Application for a permit to make the transfer was denied by the Mayor and Council, and the applicant sued to compel granting of the permit. Refusing to issue a writ of mandamus, in an opinion handed down December 9, 1927, in this case (Silvester vs. Mayor and Council of the Borough of Princeton), the New Jersey Supreme Court said, in part:

"It is agreed that . . . the Mayor and Council . . . adopted an ordinance which enacted 'that it shall not be lawful for any person or persons to keep or maintain any gasoline stands, pump, or other contrivance to furnish gasoline to the public on the curbstone or sidewalk adjacent to any garage, store or other place of business . . . without first having obtained a license' therefor . . . upon 'an application in writing' . . . which license, 'when granted' shall be good until the first regular meeting in January following.

"The relator [applicant] does not challenge the power of the borough to enact such ordinance. . . .

"But the mere legislative grant of such power [to license the location of gasoline pumps] does not imply that it must be exercised. . . . An abutting owner is not entitled, as a matter of right, to a permit to erect a gasoline pump and tank in a public street. Such a permit, 'when granted,' involves an encroachment upon the public street, and is in derogation of the common right of the public to use the street. If it be assumed that the power to grant such a permit has been conferred upon the municipal authorities, it clearly is a delegated power which should be exercised with care as to when and where such permits are granted. By its very nature it implies discretion in the granting authority, for, certainly it cannot be that the grant of a permit to obstruct permanently a public highway is a purely ministerial function.

"Since the action of the municipal authorities upon such an application is discretionary, and not ministerial, then when, as here, the application was denied, mandamus will not lie to compel the authorities to grant it, in the absence of fraud or abuse of discretion, . . . the presumption being that such refusal was based upon proper motives and valid reasons."

### Public Service Commission's Order Authorizing a City to Erect an Electric Plant Upheld

In the case of West vs. Byron, 138 Atlantic Reporter, 404, the Maryland Court of Appeals upheld an order of the Public Service Commission authorizing the city of Hagerstown to erect a municipal light plant. The following, among other, points were decided by the Court:

The order should not be disturbed unless clearly unreasonable or unlawful. It cannot be set aside merely because an existing public service utility will suffer loss through the competition set up by the municipal plant. The effect upon the public as a whole is the determining factor.

Unreasonable excess of equipment should be excluded in determining the reasonableness of a rate to be charged for service.

### Ordinance Regulating Barber Shops Found to Be Void

The city of Atlanta ordained that no colored barber should serve white women or girls or children under 14 years old and required barber shops to close at 7 p. m. on week days, excepting Saturday, when they might remain open until 9 o'clock. In the case of Chaires vs. City of Atlanta, 139 South Eastern Reporter, 559, the Supreme Court of Georgia declared that ordinance to be void.

As to the provision for closing, the Court said: "It is discriminatory, because it selects one particular lawful business that is in no wise noxious and requires those operating this business to close at a very early hour, but leaves unregulated as to hours of closing various other business."

As to the prohibition against serving white women, etc., the Court said: "The right to carry on a lawful business is here denied to one class of the citizens of the state, and the denial is based upon a distinction which it is not permissible under the Constitution to make. It is the distinction that is based upon the color of that class of citizens to whom is denied the right, in part, to carry on their business and to earn a livelihood."

**An index to decisions reported in this department from 1924 to 1927 inclusive will be found in the 1928 MUNICIPAL INDEX**

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It's simply not good enough to plow the snow to the curb and leave it there in everybody's way.

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# MUNICIPAL AND CIVIC PUBLICATIONS

*Prices do not include postage unless so stated*

**The Chemistry of Water and Sewage Treatment.**—By Arthur M. Buswell, Chief, Illinois State Water Survey, and Professor of Sanitary Chemistry, University of Illinois. Published by Book Department, the Chemical Catalog Co., Inc., New York. 1928. 362 pp. Illustrated. $7.00.

Professor Buswell has produced an admirable technical volume covering the chemical reactions taking place in the various processes by means of which water is improved for domestic and industrial use and waste liquors are rendered fit to be discharged into watercourses. Since a general knowledge of the mechanical steps involved and the general layout of various types of treatment plants is essential to a coherent understanding of the chemical operation, this phase of the subject has been covered in the present volume by means of pictures, diagrams and descriptions. The thirteen chapters devoted to water and water treatment cover colloids, composition and properties of water, the economic disadvantages of unsuitable water, industrial water treatment by lime and soda process and the zeolite process, special methods of water treatment, the chemistry of coagulation, filtration and disinfection, and odors and tastes in water. The nine chapters devoted to sewage and sewage treatment cover the chemical characteristics of sewage, methods of sewage disposal, the degradation of organic matter, the nitrogen cycle, sludge digestion, micro-biology of sludge reduction, removal of colloids from sewage by filters, the removal of colloids from sewers by activated sludge, and the micro-biology of colloid removal.

**National Association of Commercial Organization Secretaries: Proceedings of the Thirteenth Annual Meeting.**—This meeting was held in Columbus, Ohio, October 24-26, 1927. The report covers 294 pp. and gives interesting and important material on community organization; membership and budget financing in cities of different sizes; industrial development and financing; community publicity; relation of chambers of commerce with local governing bodies; practical plans for development of commercial aviation, etc. Committee reports of value are also included. (Apply to A. S. Dudley, Secretary-Treasurer of the Association, Chamber of Commerce, Sacramento, Calif.)

**A Major Traffic Street System for Portland, Ore.**—Report of the Portland City Planning Commission, submitted to the public for discussions and recommendations December, 1927. 32 pp. with folding map. Chart showing future growth of the city; views, maps. The first aim of the report is the adoption of a general setback ordinance covering all the potential arterial streets of the city and making it impossible to build on any parcel of land which would ultimately be bought by the people as part of a street widening. (Apply to C. A. McLure, Secretary, City Planning Commission, Room 418, City Hall, Portland, Ore.)

**Charity Service Reports, Cook County, Ill.**—These reports cover the year 1926 and include the Annual Message of the President of the Board of Commissioners of Cook County, and the reports of the County Hospital, the Cook County Department of Health, the Oak Forest Institutions, the Department of Outdoor Relief, the Bureau of Social Service, the Juvenile Court, the Juvenile Detention Home, and the Adult Probation Department. 483 pp. Inserts and many illustrations. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.; 15 cents postage.)

**Report of Ohio Conference on Water Purification.**—A 92-page booklet containing the papers given at the annual conference held in Toledo, Ohio, October 21-22, 1926. Studies, experiments and operating results in various Ohio cities are given. (Apply to State Department of Health, Columbus, Ohio.)

**Social Participation in a Rural New England Town.**—By James Lowell Hypes, Ph. D., Bureau of Publication, Teachers College, Columbia University, New York. 1927. 102 pp. $1.50.

A technical study of group activities, other than those of family groups, in a southern New England rural town, covering the kind and number of such activities, the conditions influencing them, and the degree of participation in them by the people of the district. Quantitative results were aimed at, and many tables and graphs are made use of to express them.

**The Cincinnati Plan for Programming Public Improvements.**—Cincinnati now has a five-year spending program designed to cover those governmental requirements not ordinarily underwritten in the annual budget. This program, which covers in "an orderly and complete way" improvements in all three units of county, city and school district, has, moreover, won the general approval of the taxpayers. At the November election all present bond requirements were authorized, with further bonds to be voted as money is needed. An 8-page typewritten report of the plan, by John B. Blandford, Jr., Cincinnati Bureau of Municipal Research, described the steps found necessary in the setting-up of the program, the proposed procedure for the expenditures, and the gaining of enlightened public opinion for its authorization. It constitutes a valuable statement of the principles of long-time financing. A limited number of copies available. (Apply to Mr. Blandford, 312 W. 9th St., Cincinnati, Ohio.)

**Aids to International Understanding.**—An excellent "reading list with notes" including 200 titles, compiled by the Newark Public Library for the Committee on International Relations of the New Jersey Federation of Women's Clubs. Its material falls into the two general divisions of "History, Economics, and Foreign Relations;" and "Racial and National Background." Its purpose, to quote from the foreword by John Cotton Dana, Librarian, is "to furnish ammunition for the war of knowledge against ignorance and jealousy," since "narrow and sullen suspicion of all other nations . . . today has every nation in its grasp." (Apply to the Committee, Miss Margaret Buttenheim, Chairman, 44 Crescent Road, Madison, N. J.)

**Proceedings of the 13th Annual Conference on Highway Engineering, University of Michigan.**—Official Publication No. 11 of Vol. XXIX, University of Michigan, giving the papers presented at the conference, which was held on February 15-18, 1927, under the direction of the College of Engineering, with the cooperation of the Michigan State Highway Department and the Michigan Association of Road Commissioners and Engineers. Construction, maintenance, legislation, planning and safety were among the subjects taken up. A list of those in attendance is given. 229 pp. (Apply to the University, Ann Arbor, Mich.)

**The Free Library of Philadelphia.**—A book containing ten illustrations of the new main building of the Library, and a report of the addresses delivered at its opening, June 2, 1927, by Dr. Cyrus Adler, President of the Board of Trustees, Clinton Rogers Woodruff, Chairman of the Committee on Main Library Site and Building, Mayor Kendrick, President Hall of the City Council, and Senator Pepper. 60 pp. (Apply to Librarian, Free Library, Logan Square, Philadelphia, Pa.)

**The Backyard.**—A leaflet of suggested equipment for the home playground, including a dozen suggested recreational features, with working drawings for sand table and horizontal bar and swing combination, also a plot plan for an intensively developed home playground on a lot 50 x 115 feet. (Apply to Department of Playground and Recreation, Byrne Building, Los Angeles, Calif.)

**Proceedings, Fifth International Road Congress.**—This Congress, held in 1926 at Milan, Italy, September 6-12, and at Rome, September 13-15 (the last previous one having been held at Seville, Spain, in 1923) was attended by about 2,000 delegates, representing 55 countries. It is reported in this book of 476 pp. The topics covered included, in the Construction and Maintenance section, concrete, bituminous and asphaltic roads, and standardization of tests for coal tar, bitumens and asphalts; in the Traffic and Administration section, traffic census bases, development and planning of towns in the interests of traffic, and special roads reserved for motor traffic. The regulations and by-laws of the Permanent International Association of Road Congresses are given, and lists of members. (Apply to the Association, 1, Avenue d'Iena, Paris, France.)

**1927 Transactions, National Safety Council: Vol. III, Public Safety.**—A 140-page booklet containing authoritative papers and discussions on public education for safety, pedestrian regulation, uniform traffic ordinances, accident statistics and causes, safety surveys and campaigns, grade crossings, traffic signs and signals, etc. The report on the Home Safety Session is also included. 50 cents postpaid. (Apply to National Safety Council, 108 East Ohio Street, Chicago, Ill.)

**Annuity and Benefit Funds.**—"An Act Relating to the Policemen's Annuity and Benefit Fund of Chicago" (as effective January 1, 1922, and amended 1923, 1925, and 1927). "An Act Relating to the County Employees' Annuity and Benefit Fund of Cook County" (approved and in force July 2, 1925). "Leading Provisions of the Act Regulating the Cook County Employees' Annuity and Benefit Fund of Cook County, Illinois, with Accompanying Tables." Three pamphlets, 64 pp., 58 pp., and 42 pp. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.; 2 cents postage.)

**A Proposed Pension Plan.**—By Charles W. Berry, Comptroller, New York City. The plan is based on the results of a survey of the existing city pension funds and systems by the Comptroller and a special committee of experts under authorization of the Board of Estimate and Apportionment. The new plan proposes a retirement system embracing all future employees at an equal rate of contribution, and includes death and disability allowances. The thirteen existing separate pension systems of the city would be gradually eliminated by the retirement of the present members and by admitting no new members. (Apply to the office of the Secretary, Board of Estimate and Apportionment, Municipal Building, New York.)

**The Charter of the City of Cincinnati.**—Arranged and published by the Cincinnati Chamber of Commerce, 1927-8. Pocket size, 23 pp. (Apply to Howard M. Wilson, Manager, Civic Affairs Department, Cincinnati Chamber of Commerce, Cincinnati, Ohio.)

**A City Manager Charter.**—The recently adopted charter of Oklahoma City, Okla., as amended, is a 16-page document comprising 12 Articles under which a reorganization of municipal government is authorized and rules for the conduct of every department of the city's affairs are concisely set forth. The Articles cover "Organization and Powers;" "Legislative Department" "Civil Service Commission;" "Duties of Officers and Employees;" "Ordinances;" "Revenue;" "Public Service Corporations," etc. (Apply to City Clerk.)

**Annual Report of the Engineering Department, Los Angeles, Calif.**—This covers the year to June 30, 1927, and contains descriptive matter, statistics, charts and photographs. 172 pp. (Apply to John C. Shaw, City Engineer.)

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Children's **Theatres and Plays.**—By Constance D'Arcy MacKay. D. Appleton and Co. 1927. 365 pp. $3.50.

Miss MacKay, who has contributed so much to the cause of amateur drama in America, and who, particularly, has cared so much and labored so devotedly for the creation of a dramatic literature for children, now discusses the whole movement towards children's theatres in the United States. She compares our progress along this line with that made in other countries (not always in a way to contribute to our complacency). There is an enlightening chapter on the delicate and elusive art of writing and producing a children's play; chapters on "Church Drama for Children," "Producing Children's Plays in Churches," "Outdoor Plays" and "The School Theatre;" a chapter on the puppet show, "The Littlest Theatre of All;" and a chapter written with optimism as well as insight on that most troubled and seemingly unsolvable problem of present-day recreation—"Children and the Movies." "Children's Theatres and Plays" is well illustrated, contains an adequate bibliography, and seems altogether worthy of taking its place beside the author's earlier indispensable classic of the community theatre, "How to Produce Children's Plays," and her substantial row of produceable dramatic material of child appeal.

**The Bureau of Parks, Buffalo, N. Y.**—A Survey of the Administration of the Bureau of Parks of the Department of Parks and Public Buildings of Buffalo, N. Y., by the Buffalo Municipal Research Bureau, Inc. November, 1927. 37 multigraphed pp., besides charts and folding table of comparative data on parks in 13 cities. The survey was undertaken to ascertain whether waste existed in the administration of the Buffalo parks, and if so, to what extent, and what remedies were possible. The findings and recommendations constitute an indictment on the ground of inefficiency and extravagance, and show the possibility of efficient reorganization of the department under the new charter effective January 1, 1928. (Apply to the Bureau, White Building, Buffalo, N. Y.)

**The Enforcement of Housing Legislation.**—By James Ford. Reprinted from *Political Science Quarterly*, December, 1927, published by the Academy of Political Science, Columbia University, New York. 13 pp. The advantages of having a uniform state housing act with clear and comprehensive provisions are shown, and also the importance of qualified administrative heads, adequate appropriations, trained inspectors, detailed and well-kept records of buildings, impartial boards of appeals (if any), clear division of authority between state and city departments, cooperation of the courts, and public support of the housing enforcement official. (Apply to the Academy.)

**Committee on Public Relations and Community Organization of the New England Council.**—A report presented to the Third New England Conference, at Springfield, Mass., November 17-18, 1927. 16 quarto pp. This committee acts as a clearing-house for information on all constructive movements for the economic welfare of New England or any of its sections. The questions discussed are: migration of industry; the gain in industries; the importance of community inventories of economic assets and liabilities; with a set of fourteen questions which the Committee sent out to community organizations and individuals, under the heading, "Try These on Your Town"; community bookkeeping; taxation and public expenditure. Various means used by the Committee—the Speakers' Bureau, the New England News Letter, the Aviation Conference in Boston—are explained, and the new community spirit of Keene, N. H., and other cities is mentioned. (Apply to the Council, Statler Building, Boston, Mass.)

**Chicago Airport Conference.**—A 23-page booklet announcing the airport conference called for December 12, 13 and 14 by Mayor Thompson of Chicago. A map and description of the Chicago airport at 63d Street and Cicero Avenue is included, and also information on airport construction, marking of obstructions, etc., obtained, as stated therein, chiefly from the Bureau of Aeronautics of the United States Department of Commerce. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.; 2 cents postage.)

**Playground Mystery Boxes.**—By Mabel E. Macomber, President, City Playground League of New York, 1908-1927; Chairman, Rusurban Play Park Committee, 1923-1927; Chairman on Playgrounds, New York City Federation of Woman's Clubs, etc. Richard G. Badger, The Gorham Press, Boston. 1927. 107 pp. $2.00.

This book of miscellany drawn from the author's twenty years' study of the "mystery boxes" of child personality on the playgrounds of New York is designed (the preface explains) as a "primer of principles" for those who intend taking up playground work as a profession, those who have occasional concern with playground problems, and the general reader. There are chapters of general discussion of playground theory and practice under such heads as "What Is a Playground?", "Why Are Playgrounds?","Why Supervision?", and a chapter on "The Model Playground." Other chapters consider a supposititious first day of an inexperienced worker on a playground, examing such details as proper dress for the work, getting acquainted with the children, the management and care of play equipment, etc. Those who have followed the developing history of recreation in America as recorded in THE AMERICAN CITY will note with interest that the Playground Creed of the City Playground League of New York, which occupies a prominent place in the book, is reprinted with credit from the November, 1911, issue of this magazine.

**Annual Report of the Board of County Road Commissioners, Wayne County, Mich.**—The original highway plan of this Board called for 350 miles of improvements. These have been completed and 157 miles added, "forming the finest system of urban, suburban, and rural highways in the world today." This is a valuable report in view of the increased interest in county road plans. It covers the period from September 1, 1926, to August 31, 1927. 176 pp., with county road maps. (Apply to the Board, 1103 Cadillac Building, Detroit, Mich.)

**Modern Town Planning and Housing.**—A descriptive catalog of the second exhibition in the Federated Malay States, held September 26-October 1, 1927, as arranged by the Department of Town Planning, F. M. S., and Kinta Sanitary Board. It constitutes a brief history of the planning of cities from Ancient China and the East, through Medieval Europe, and down to the most modern zoning regulations of American cities and British housing schemes. One section of the publication, corresponding with a section of the exhibition, shows the application of modern town planning and housing practice to the local conditions in the Federated Malay States. 82 pp. (Apply to Town Planning Administrator, Ipoh, Perak, Federated Malay States.)

**Clean Hands and Clean Dishes.**—What the laws of the land and what the health officers have to say on specific subjects of cleanliness, are topics discussed in the December, 1927, issue of *Cleanliness Journal*. Dr. James A. Tobey is announced as having undertaken a comprehensive survey of state and national laws governing school sanitation, factory sanitation, food establishments, railroad stations, and all sanitary regulations. "The Inside of the Cup," a 2-page article, gives results of investigations into dishwashing in restaurants made by health officers, with suggestions as to what constitutes sanitary procedure, and the general conclusion that in this field "All is not Clean that Glitters." (Apply to Cleanliness Institute, 45 East 17 Street, New York.)

**Improved Sanitation in Milk Production.**—Leaflet No. 3 of the United States Department of Agriculture, by R. J. Posson, Associate Market Milk Specialist, Bureau of Dairy Industry, issued May, 1927. It gives practical information on safeguards for sanitary milk production. 8 pp. (Apply to the Department, Washington, D. C.)

**Criminal Statistics and Identification of Criminals.**—A report submitted to the National Crime Commission by the Sub-Committee on Pardons, Parole, Probation, Penal Laws, and Institutional Correction, with foreword by Frank O. Lowden, Chairman. 20 pp. (Apply to National Crime Commission, 120 Broadway, New York.)

**Annual Report of East Bay Municipal Utility District, 1926.**—Nine California cities on the east side of San Francisco Bay make up this district, the purpose of which is to provide an adequate and otherwise satisfactory water-supply for these cities. The source will be Pardee Reservoir on the Mokelumne River, above Lancha Plana, and water will be brought to the cities by an aqueduct over 93 miles long. Work was started October, 1925, and the present volume is a report of progress. 89 pp. (Apply to Arthur P. Davis, General Manager for the District, 1924 Broadway, Oakland, Calif.)

**Handbook for Immigrants to the United States.**—Issued by the Foreign Language Information Service for the purpose of assisting immigrants to fit into American life more quickly, and of averting disappointment, disillusionment and exploitation, this booklet explains the restrictions on admission, preparations for coming, and something about life and conditions in the United States. 180 pp. (Apply to Foreign Language Information Service, 222 Fourth Avenue, New York.)

**Atlantic Deeper Waterways Association.**—Report of the proceedings of the 20th annual convention, in Baltimore, Md., September 9-15, 1927. 186 pp. (Apply to the Association, 1405 Widener Building, Philadelphia, Pa.)

**City Plan Procedure in Pennsylvania.**—A 17-page bulletin (CPC-15) of the Pennsylvania Association of Planning Commissioners, describing the procedure for the making, adopting and enforcement of city plans in Pennsylvania municipalities. September 1, 1927. (Apply to Bureau of Municipal Affairs, Commonwealth of Pennsylvania, Harrisburg, Pa.)

**Salaries and Fees of Borough Officers (Pennsylvania).**—The *Borough Bulletin* for January, 1928, gives an analysis and summary of salaries or fees of burgesses, solicitors, secretaries, engineers, managers, controllers, treasurers, tax collectors, chiefs of police and health officers, for Pennsylvania, together with statutory provisions relating thereto. 8 pp. 25 cents. (Apply to T. F. Chrostwaite, Editor, Hanover, Pa.)

**Résumé of New Motor Vehicle Law (Pennsylvania).**—The new motor vehicle act of Pennsylvania, effective January 1, 1928, is analyzed and interpreted for ready reference in the December, 1927, issue of *Pennsylvania Progress*. 4 pp. 10 cents. (Apply to State Chamber of Commerce, Harrisburg, Pa.)

**Operation and Procedure, Traffic Violations Bureau.**—A pamphlet describing a plan of handling traffic violations, and quoting the Kansas City, Mo., ordinance, including schedule of penalties. 14 pp. (Apply to Geo. D. Barnard Stationery Co., Vandeventer and Laclede Avenues, St. Louis, Mo.

**Guide to "Chicago Beautiful."**—A handbook compiled by the Municipal Art League of Chicago for the Association of Commerce and the Art Institute. It is divided into an introduction and five chapters, each taking up one of the geographical divisions of the city. It contains brief descriptions of public works, buildings and institutions, noteworthy private architecture, works of art in the parks, etc. 10 cents. (Apply to the *Chicago Daily News*.)

**Report of the City Parks Association, Philadelphia, 1926.**—A booklet of 137 pages containing the 38th Annual Report of the Association. It is profusely illustrated with photographs of buildings, streets, parks, etc., and several airplane views. Various recommendations for civic improvements are made. (Apply to the Association, 701 Stephen Girard Building, Philadelphia, Pa.)

**Bridges Over Navigable Rivers.**—A 16-page pamphlet presenting an address of President J. Hampton Moore of the Atlantic Deeper Waterways Association. It is a plea for making bridge plans conform with navigation requirements. (Apply to the Association, 1405 Widener Building, Philadelphia, Pa.)

**Salary Statistics: Large and Medium-Sized Public Libraries.**—A 4-page report, in tabular form, including figures for all clerical workers, appears in the Bulletin of the American Library Association (December, 1927), accompanied by a brief descriptive and explanatory article. (Apply to the Association, Chicago, Ill.)

# Don't Sell American Traffic "*Short*"

THE Senior J. P. Morgan's maxim "don't sell America short" applies especially to America's roads and streets.

Every engineer knows the story of the automobile's never-ending increase . . . of railroads taking to the highways . . . of heavy, high-speed busses . . . highway traffic still in the early stages of development with loads becoming heavier and heavier on the pavements.

Traffic has been "sold short" in the past. First dirt roads, then gravel, then other pavements fell before its pounding and the severe action of weather changes.

Of all pavements only those of brick have withstood this increase in traffic.

Brick pavements that have been in use for thirty years are being relaid with the new and unused side up—good for thirty years more use.

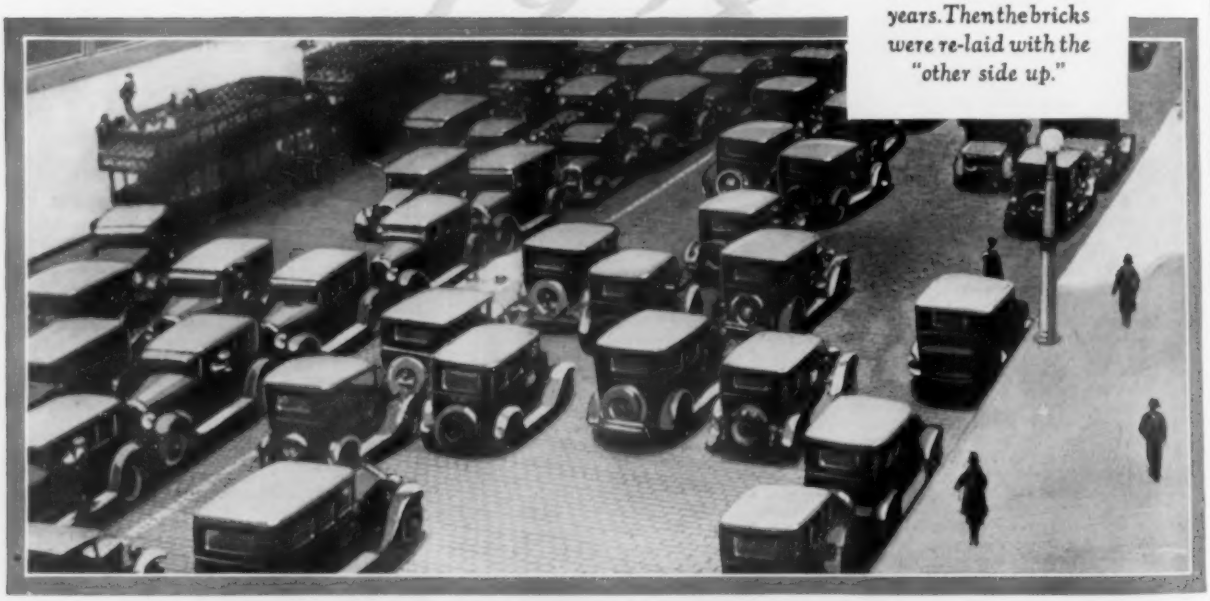
*Paving brick resists the two destroyers of roads—the weather and traffic. Laid with asphalt between bricks, it makes a surface absolutely watertight. Moisture can't get in to start destruction. This surface, sand cushioned is resilient under the shocks of heavy traffic.*

**National Paving Brick Manufacturers' Association**
332 S. Michigan Avenue, Chicago

1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928

**PROOF OF BRICK'S AMAZING TOUGHNESS**

*Many brick-surfaced pavements have been in use for over 30 years. Then the bricks were re-laid with the "other side up."*



# VITRIFIED BRICK PAVEMENTS

## FACE THE FUTURE • PAVE WITH BRICK

Yes—we should like you to mention THE AMERICAN CITY.

**Postponing Strikes.**—By Ben M. Selekman. Russell Sage Foundation, New York. 1927. 405 pp. $2.50.

This study of the Industrial Disputes Investigation Act of Canada is a second report on the subject by Mr. Selekman, of the Department of Industrial Studies, Russell Sage Foundation, a 41-page pamphlet giving the findings of an inquiry ten years ago having been published in 1917. The present volume includes data of the earlier study and the results of nine additional years of experience, making a total of eighteen years for the Act. The study has been made with the purpose of appraising the Canadian experience as a guide to the treatment of corresponding problems in the United States, where conditions are similar in many respects to those in Canada. The increased success of the Act as a means of conference and negotiation, rather than compulsion, is stressed.

**The Pan American Confederation for Highway Education: Its Aims and Purposes, Constitution and By-Laws.**—This 40-page booklet contains also the personnel of the First, Second, and Third Pan American Highway Commissions, and other data. (Apply to the Pan American Confederation for Highway Education, Pan American Union, Washington, D. C.)

**River Regulation in New York State.**—Rivers have not been adequately controlled in New York State, as far as public needs require, according to the publishers of this brochure, who undertake to show what river regulation is and what it would accomplish in New York. 24 pages, illustrated. (Apply to Empire State Gas and Electric Association, Grand Central Terminal, New York.)

**Institute of Public Affairs, Virginia.**—Addresses delivered at the General Sessions of the Institute, August 18-20, 1927. In the October 1, 1927, Summer Quarter Bulletin of the University. 251 pp. Illustrated. Among the topics discussed of special interest in the field of THE AMERICAN CITY, are: Municipal Government and the Future of American Democracy; Private Rights and Public Authority; The Future of Aviation; The Relation of Education and Research to the Rural Problem. $1.00. (Apply to Dr. Charles Gilmore Maphis, Director of the Institute, University, Va.)

**Buffalo's Hospitals.**—The December number of *The Buffalo Journal of Commerce* contains an article entitled "Helping the Sick at Perrysburg," by Mayor Frank X. Schwab, which relates to Buffalo's sanatorium for the treatment of incipient tuberculosis, and also an article on "The Buffalo City Hospital," by Edward J. Meyer, M.D., President of the Board of Managers of the latter hospital. 15 cents. (Apply to the *Journal*, 416 Chamber of Commerce Building, Buffalo, N. Y.)

**Better Homes in America.**—Two pamphlets: Guidebook for Better Homes Campaigns in Cities and Towns, Better Homes Week, April 22 to April 28, 1928, 48 pp., 10c.; Boy-Built Houses—A School Project Method of Training Boys for House Building, by Blanche Halbert, 36 pp., 10c. Both illustrated. President Coolidge has said: "The Better Homes in America movement provides a channel through which men and women in each community can encourage the building, ornamenting and owning of private homes that lighten the burden of housekeeping." These pamphlets are definite, practical handbooks of the movement. (Apply to Better Homes in America, 1653 Pennsylvania Avenue, Washington, D. C.)

**Williamson's Village Laws of the State of New York.**—By John T. Fitzpatrick, of the Albany Bar. Williamson Law Book Co., Rochester, N. Y. 1927. Second Edition. 992 pp. $23.00.

In the notice given this valuable compilation in THE AMERICAN CITY for January, the publisher's address was erroneously given as Albany, N. Y.

## Other Reports and Booklets Received

ABILENE, TEXAS.—Descriptive booklet. Chamber of Commerce. 8 pp.

CAMBRIDGE, MASS.—Annual report, City Engineer, to March 31, 1927. 39 pp.

CHICAGO, ILL.—Annual report, Comptroller, 1926. 250 pp.

DETROIT, MICH.—Annual report, Superintendent of Schools, to June 30, 1927.

DETROIT, MICH.—Report on Cost of Government, Wayne County, 1927-1928. Detroit Bureau of Governmental Research. 10 pp.

DETROIT, MICH.—Descriptive booklet. Detroit Convention and Tourist Bureau. 20 pp.

DULUTH, MINN.—"Economy," general report of Taxpayers' League of St. Louis County. 16 pp.

NEW ORLEANS, LA.—Annual report, Association of Commerce, 1927. 72 pp.

PASADENA, CALIF.—Annual report, Water Department, to June 30, 1927. 64 pp.

PEORIA, ILL.—Annual report, Association of Commerce, 1927. 55 pp.

ROANOKE, VA.—Industrial brief. Chamber of Commerce. 24 pp.

SCHENECTADY, N. Y.—Annual report, Chamber of Commerce, 1927. 32 pp.

TRENTON, N. J.—Annual report, Comptroller, 1926. 78 pp.

OLYMPIA, WASH.—Biennial report, State Parks Committee, to September 30, 1926. 20 pp.

# CONVENTIONS—WHEN AND WHERE

FEBRUARY 8-10.—WATERLOO, IOWA.
*Iowa Engineering Society. Annual meeting.* Secretary, John S. Dodds, Ames, Iowa.

FEBRUARY 13-17.—NEW YORK.
*American Institute of Electrical Engineers. Winter convention.* Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

FEBRUARY 14-16.—LAWRENCE, KANS.
*Kansas Water Works Association. Annual convention and three-day Water Works School.* Secretary-Treasurer, Prof. E. A. Boyce, State Board of Health, Lawrence, Kans.

FEBRUARY 15-17.—ATLANTIC CITY, N. J.
*New Jersey Mosquito Extermination Association. Annual meeting.* Secretary, Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

FEBRUARY 15-17.—ATLANTIC CITY, N. J.
*Association of Highway Officials of North Atlantic States. Annual convention.* Secretary-Treasurer, A. Lee Grover, State Highway Commission, Trenton, N. J.

FEBRUARY 16-17.—ALTOONA, PA.
*Pennsylvania Association of Planning Commissions. Annual convention.* Address: W. A. Hoyt, City Planning Commission, Altoona, Pa. Secretary, Leo J. Buettner, Johnstown, Pa.

FEBRUARY 17.—NEWARK, N. J.
*New Jersey State League of Municipalities. Annual convention.* Secretary, Sedley H. Phinney, 34 West State Street, Trenton, N. J.

FEBRUARY 17-18.—ST. LOUIS, MO.
*American Forestry Association. Annual meeting.* Executive Secretary, Ovid M. Butler, 1523 L Street, N. W., Washington, D. C.

FEBRUARY 20-21.—WASHINGTON, D. C.
*Association of Community Chests and Councils, Citizens Community Conference.* Executive-Director, Allen T. Burns, Graybar Building, Lexington Avenue at 43d Street, New York.

FEBRUARY 21-22.—NEW HAVEN, CONN.
*Connecticut Society of Civil Engineers. Annual meeting.* Secretary, C. M. Blair, Box 235, New Haven, Conn.

FEBRUARY 21-24.—WICHITA, KANS.
*Southwest Road Show and School.* Secretary-Treasurer, F. G. Wieland, Wichita, Kans.

FEBRUARY 23-24.—DENVER, and 25. PUEBLO, COLO.
*American Water Works Association, Rocky Mountain Section. Annual meeting.* Secretary, Dana E. Kepner, 420 State Bldg., Denver, Colo.

FEBRUARY 23-25.—TORONTO, ONT.
*Ontario Good Roads Association. Annual meeting.* Secretary, W. S. Squire, Toronto, Ont.

FEBRUARY 25—MARCH 1.—BOSTON, MASS.
*National Education Association, Department of Superintendence. Annual meeting.* Executive Secretary, S. D. Shankland, 1201 16th Street, N. W., Washington, D. C.

FEBRUARY 28—MARCH 1.—PHILADELPHIA, PA.
*American Concrete Institute. Annual convention.* Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

FEBRUARY 29.—ALBANY, N. Y.
*New York State Conference of Mayors and Other Municipal Officials. Mid-Winter Conference.* Secretary, William P. Capes, City Hall, Albany, N. Y.

MARCH 8.—CONCORD, N. H.
*New Hampshire Good Roads Association. Annual meeting.* Secretary, Frank D. Sleeper, Laconia, N. H.

MARCH 8-10.—LEWISTOWN, MONT.
*American Water Works Association, Montana Section. Annual meeting.* Secretary, Herbert B. Foote, Division of Water and Sewage, State Board of Health, Helena, Mont.

MARCH 15-16.—LAFAYETTE, IND.
*American Water Works Association, Indiana Section. Annual meeting.* Secretary, C. K. Calvert, 1902 North New Jersey Street, Indianapolis, Ind.

MARCH 23-24.—TRENTON, N. J.
*New Jersey Sewage Works Association. Annual meeting.* Secretary, John R. Downes, Bound Brook, N. J.

APRIL 17-19.—ATLANTA, GA.
*Southeastern Water and Light Association, Annual convention.* Secretary, W. F. Stieglitz, Columbia, S. C.

APRIL 19-21.—JACKSONVILLE, FLA.
*Florida Engineering Society. Annual meeting.* Secretary, J. R. Benton, Gainesville, Fla.

MAY 7-10.—DALLAS, TEXAS.
*National Conference on City Planning. Annual conference.* Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

MAY 7-10.—ATLANTIC CITY, N. J.
*National Fire Protection Association. Annual meeting.* Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 7-11.—WASHINGTON, D. C.
*Chamber of Commerce of the United States of America. Annual meeting.* Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

MAY 22-JULY 10 (TENTATIVE).
*American Civic Association. Pacific Coast Traveling Meeting.* Secretary, Miss Harlean James, Union Trust Building, Washington, D. C.

JUNE 8-9.—BALTIMORE, MD.
*American Association for Promoting Hygiene and Public Baths. Annual meeting.* Secretary, Hildergarde M. Rosen, 139 West 96th Street, New York.

JUNE 10-14.—ASHEVILLE, N. C.
*Southern Commercial Secretaries Association. Annual convention.* Secretary-Treasurer, J. A. Gawthorp, Greensboro, N. C.

WEEK OF JUNE 11.—SAN FRANCISCO, CALIF.
*American Water Works Association. Annual convention.* Secretary, Beekman C. Little, 170 Broadway, New York.

JUNE 13-15.—BRAINERD, MINN.
*League of Minnesota Municipalities. Annual convention.* Acting Executive Secretary, Harvey Walker, University Library, Minneapolis, Minn.

JULY 2-7.—PARIS, FRANCE.
*International Federation for Housing and Town Planning. Congress.* Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England. Chariman, American Committee, Harold S. Buttenheim, 443 Fourth Ave., New York.

AUGUST, LAST WEEK.—SYDNEY, CAPE BRETON.
*Union of Nova Scotia Municipalities. Annual convention.* Secretary, Arthur Roberts, K. C., Bridgewater, Nova Scotia.

SEPTEMBER 18-20.—ASHEVILLE, N. C.
*International City Managers' Association, Annual convention.* Executive Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

OCTOBER 1-5.—ATLANTIC CITY, N. J.
*Playground and Recreation Association of America. Annual convention.* Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER, FIRST TWO WEEKS.—SEVILLE, SPAIN.
*International Federation of Local Government Associations.* (*formerly International Congress of Cities*). Director, E. Vinck, Rue de la Regence, Brussels, Belgium.

*Now—*

*I can combine rapid construction with lasting service*

SPEED is always the important thing in drainage—you cannot blame taxpayers for wanting quick action.

I use Armco Pipe to speed up construction—immediate shipment—quickly hauled—no breakage—installation a matter of hours.

What is more, 22 years actual use has pre-proved their durability. That can be said only for culverts of Armco Ingot Iron purity (99.84%).

Investigate Armco Rapid Construction the next time you install culverts and avoid traffic interruption.

*Forty manufacturing plants throughout the United States and Canada assure you immediate service on drainage requirements, no matter where you may be*

ARMCO CULVERT MANUFACTURERS' ASSOCIATION
MIDDLETOWN, OHIO

# ARMCO CULVERTS

*Predominant in use—because predominant in quality*

©1928, Armco Culvert Mfrs' Assn., Middletown, Ohio

# NEWS AND ILLUSTRATIONS

**Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings**

## New Road Form Meets Demand of Heavy Road Machinery

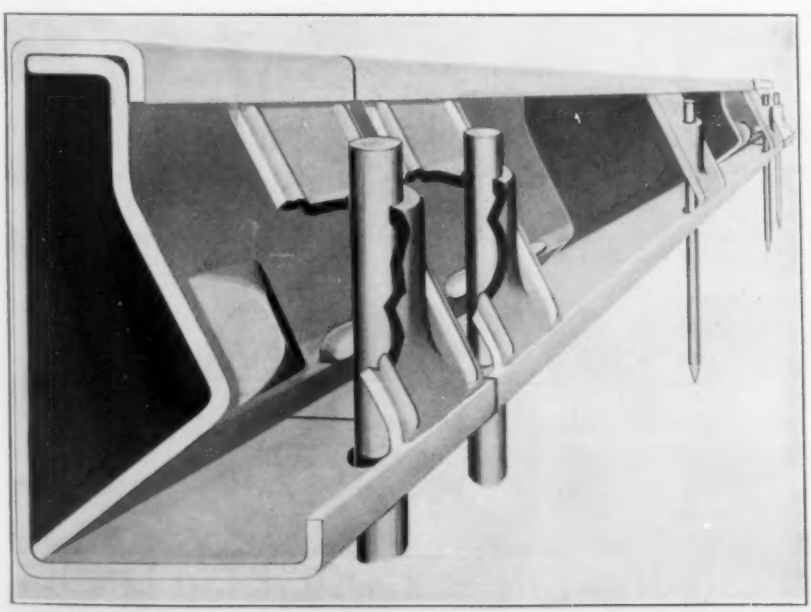
Some time ago J. N. Heltzel, President, the Heltzel Steel Form and Iron Co., Warren, Ohio, prophesied that the day was not far distant when the weight and thrust of heavy road machinery would compel the complete redesign and reconstruction of steel road forms. In announcing a new road form of a distinctly different type from any heretofore developed, Mr. Heltzel states that he believes the day has arrived and that this present form will stabilize the heavy construction equipment which runs on the road forms.

This new road form is made of 3/16-inch special steel plate with double reinforcing flanges and a 6-inch base. It follows the same general design as the Heltzel Road Rail. Heavy steel stake pockets are welded to the two rail flanges, and 1-inch round steel stakes are used with an angular-shape steel joint lock made of ¼-inch steel plates. This stake lock wedges between the stakes and the face of the rail, with one leg of the lock wedging against the intersection of the face and the top of the rail, and the other leg wedged against the inner section of the face and the base of the rail.

Two wedge-shaped swells pressed into the stake lock wedge, one against either stake, making a positive locking arrangement, and a larger swell pressed into the stake lock serves as a releasing lug which when tapped with a sledge unlocks the form.

This joint locking arrangement not only locks the forms, but automatically aligns the rail ends and holds them rigid. From the standpoint of setting or stripping the forms, the simplicity of these operations is noticeable. The form is a complete unit with the stake lock at one end of the rail having no separate parts, excepting the two stakes.

To set the forms the rails are butted end to end, the joint lock placed in position and the stakes driven. One tap with the sledge locks the forms and aligns the rails.



THE NEW HELTZEL STEEL ROAD FORM

## Traffic Control by Reflectors

It is admitted that reflectors cannot be so bright as electric lights. Persons reflectors, made by the Persons-Majestic Manufacturing Co., 54-72 Commercial Street, Worcester, Mass., and used in Persons reflector towers, at night effectively reflect the light of approaching cars and street lights and can be seen from 500 to 800 feet away, according to atmospheric conditions. These towers are carefully designed and well built with harmonious proportions, making them ornamental and improving the appearance of a locality.

The panels, frame and top are made of cold-rolled steel embossed. The angle-irons occupy the corners on the inside. These are drilled and tapped. Machine screws pass through the top, base, frame and panels and into the angle-irons, locking all parts solidly together. As a replacement part fits in a good automobile, new parts are made to fit into the Persons tower when needed.

These towers cost nothing for artificial lighting, as no oil, electricity or gas is needed. The reflectors may be red or amber as desired. The tower measures 54 inches high, and 30 inches diameter at the base, and the reflectors are 12 inches in diameter. The lettering is furnished as desired. The towers weigh complete 110 pounds.

THE PERSONS REFLECTOR TRAFFIC GUIDE

## Highway Engineering Bureau Organized by Charles M. Upham

Charles M. Upham, Manager, American Road Builders' Association, has announced the opening of the offices of the Highway Engineering Bureau in the National Press Building, Washington, D. C. This Bureau offers consulting services in highways, transportation and associated industries. Charles M. Upham is President, Fred E. Schnepfe, Vice-President, and the associated advisory engineers are Albert T. Goldbeck, Director, National Sand and Gravel Association; Prevost Hubbard, Chemical Engineer, the Asphalt Association; Fred A. Reimer, Consulting Civil Engineer, East Orange, N. J.; Henry G. Shirley, Chairman, State Highway Commission, Richmond, Va.; William A. Van Duzer, Deputy Engineering Executive, State Department of Highways, Harrisburg,Pa.; Dr. J. A. L. Waddell, and Shortridge Hardesty, of Waddell & Hardesty, Consulting Engineers, New York City; Earl Stafford; and Maurice Holland.

# What's back of us?

A product can be no better than the ability of the manufacturer to build—and the equipment with which he has to work.

TECO'S experience in the field—of "street flushers—street sprinklers—road oilers—etc.,"—is wide and varied when the personnel of its company is considered.

The design and construction of its various equipments are the result of *engineering talent* of men whose ideas and finished units are known to thousands of municipal executives as equipments of proved service, long life, dependability and economy.

The TECO plant is outstanding in that the latest types of modern manufacturing machinery and production methods are employed. Such assembly units as pumps, engines, etc., are the products of the leaders of their fields.

It is therefore only obvious that, with all of this, every TECO unit can't help but stand for the utmost in design—quality of material—skilled workmanship in finish—and the extreme in satisfaction and economy in operation.

***We suggest you ask for our latest bulletins. Our engineering department will gladly cooperate with you in designing special equipment.***

**TECO**

Street Flushers / Street Sprinklers / Road Oilers / Special Equipment

**TRUCK EQUIPMENT CORPORATION / / JOLIET, ILLINOIS**

THE NEW BUFFALO-SPRINGFIELD SPECIAL GRADING ROLLER

## A Specially Designed Grading Roller

A special grading roller that is capable of performing all the functions of a standard grader as well as rolling and scarifying, has been developed by The Buffalo-Springfield Roller Co. This has been designed for cases where the work of the roller and scarifier has to be supplemented by that of a hauled or power grader.

While the weight of this grading roller permits it to be used for rolling subgrade for concrete pavement, it has the weight and stability of the largest power graders. It is narrow enough to permit its use between forms of strip-built concrete roads, and it is short enough to be turned on a 16-foot roadway. These features make this piece of equipment well suited for preparing the subgrade in front of the grader and also for shaping, rolling, and finishing the shoulders after the pavement is laid. If a subgrading machine is used, the grading roller will provide power for hauling it and for scarifying any hard spots encountered.

The maintainance of sand-clay, gravel, and broken-stone streets and roads, involving occasional scarifying, reshaping and rerolling of the surface, can be done without the aid of any other machine and with but one operator.

The power and driving mechanism of the grading roller consists of a high-grade 4-cylinder motor, the power of which is transmitted to the drive rolls through spur gears of large diameter and wide face. Provision is made for three gear speeds in both the forward and the backward motion, giving a high ratio for difficult scarifying and grading and a low ratio for light work and travel from place to place. The machine is reversed entirely through clutches without change of gears, which is of much importance when operating in hilly country or on surfaces that are easily injured by too abrupt reversing.

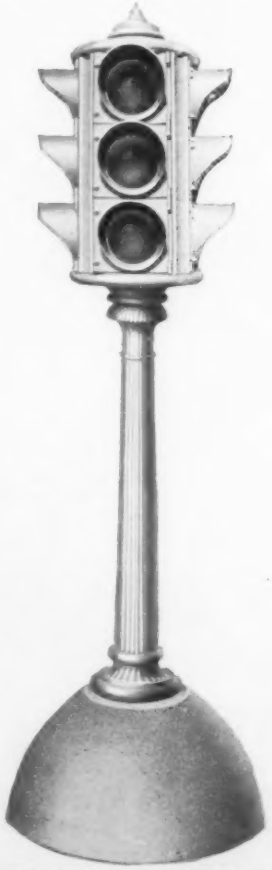
The operator's position is in advance of the power unit and over the grading blade where he has a clear view of the work of the blade. The drive rolls can be provided with picks or lugs to increase traction and was made according to standard practice.

The new machine can be furnished either with or without scarifier, air-compressor and air-tank.

## A New Electric Traffic-Control Signal Developed

A new signal unit of the three-light type has been developed by the Interflash Signal Corporation, 120 Broadway, New York. The illustration shows the four-way pedestal-type signal, but to meet demands of all kinds of installations the signal is also furnished in one-way, two-way, and three-way light indications. Its construction is such that it may be mounted either upon standards or suspended overhead on a cable or mast-arm.

In the development of this new stop-and-go signal the Interflash Corporation has embodied the recommendations of leading traffic engineers and official bodies dealing with traffic problems. The housing or body of the signal is made of cast aluminum alloy throughout, as are likewise the lens and reflector holders and sun visors. The lenses used in this new signal are of the approved diffusing roundel type, each 8⅜ inches in diameter. The light source of the signal is the standard 60-watt traffic signal lamp whose rays are directed by a silvered polished glass reflector.

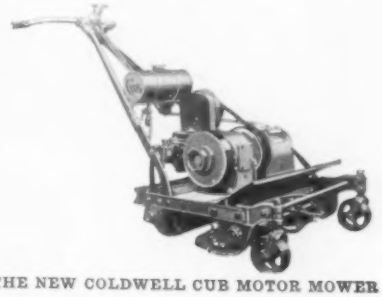


THE INTERFLASH ELECTRIC TRAFFIC CONTROL SIGNAL

Each of the signal indications are independent units, and the renewal of a signal lamp and other necessary replacements or adjustments can be made by merely opening the section affected and without disturbing in any way the operation of the signal. The Interflash control signals are finished in dark green Duco enamel and shipped completely assembled, ready for mounting as required.

## A New Light-Weight Power Lawn-Mower

Recognizing the increasing demand for light-weight, substantially built power lawn-mowers at a moderate price, the Coldwell Lawn Mower Co., Newburgh, N. Y., has built the Cub mower with a 4-cycle, water-cooled motor with radiator and fan, especially designed for this mower. It is said that the construction of the Cub motor mower is so simple that an inexperienced man can understand and operate it. Automatic engine lubrication



THE NEW COLDWELL CUB MOTOR MOWER

and elimination of parts requiring adjustment by the operator are intended to insure its dependable performance, free from troubles and delays.

The transmission is entirely enclosed, and spring-loaded dry-plate clutches with renewable linings are used, so that no adjustment will be required.

The cutter front, which carries the revolving cutter and bottom knife, constitutes a demountable unit which may be conveniently removed for sharpening the knives. The full-width drive roller provides a complete light rolling with each cutting. As an added feature, a drive-wheel assembly may be substituted for the full-width drive roller where ground conditions require a wheel-type machine.

The speed of travel is automatically controlled by a governor which is set for a comfortable walking gait, enabling the operator to cover two to three acres of combined mowing and rolling per day.

## C. E. Smith and Co., Consultants

The consulting engineering business of C. E. Smith and Co., Railway Exchange Building, St. Louis, Mo., will be continued under the present title by men who have been associated with the company for five to twelve years. Among them are M. H. Doyne, S. B. May, M. M. Kinsey, F. R. Nohl, civil engineers, R. M. Boyles, mechanical engineer, B. F. Thomas, Jr., electrical engineer, and R. L. Saettele, engineer and cartographer. M. H. Doyne is Manager and M. C. Beck is Secretary and Treasurer.

# Patches that Last

HERE—in a single portable outfit—is the solution to many of the most difficult problems those charged with the maintenance and repair of asphalt, brick, concrete and other types of pavements are called upon to solve. Consider:—

1. That the best pavement needs patching occasionally;
2. That the best patch is a hot patch; and
3. That the best, and by all odds the most economical, hot patch is one mixed right on the job and laid before it has had time to cool—which is what can be done with the Western Hot Patch Outfit;

and you will understand why the City of Chicago, for instance, has forty-five of these outfits in constant use winter and summer.

Combined in a single machine are bins for heating sand, stone, cement and stone dust, and asphalt. Means are provided for accurately measuring the proper materials for the various kinds of patches. The aggregate is mixed by hand in the pan seen in the illustrations, and because it is a *hot mix* the work can be done just as well in cold weather as in hot, which is not true of other patching methods.

Street departments, public utilities and others whose duty it is to maintain pavements or rights of way cannot afford to be without this time, labor and money saving outfit. The coupon will bring you by return mail—and, of course, without any obligation—a copy of the catalog which tells the whole story—and we'll promise you it's a mighty interesting one.

Please send me a copy of the Western Hot Patch Outfit Catalog.

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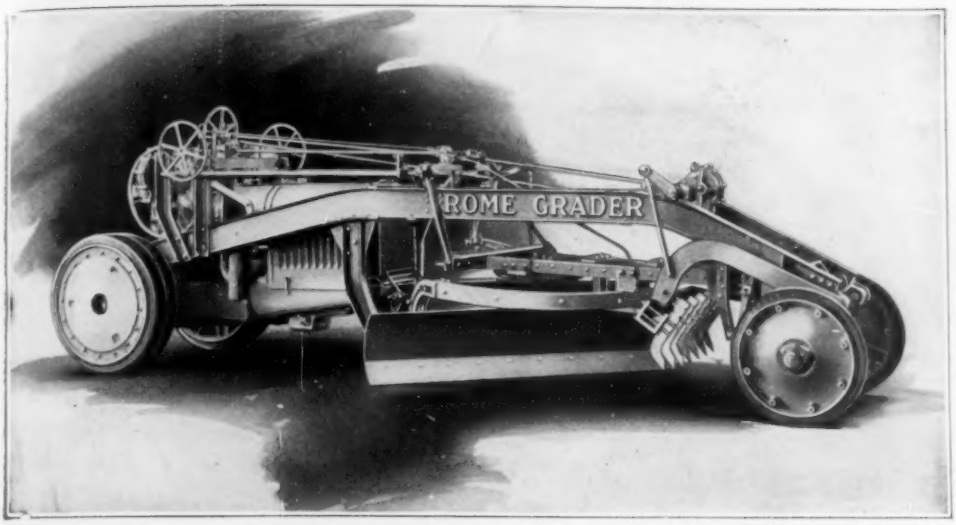
THE AUSTIN-WESTERN ROAD-MACHINERY-CO. CHICAGO




THE NEW ROME HIGH-LIFT MOTOR GRADER

## A General Utility Motor Grader

Combining the special as well as the patented features of the regular Rome line of high-lift graders, together with the McCormick-Deering tractor, the Locomotive Department of the Rome Manufacturing Co., Rome, N. Y., has developed a new machine that is first a grader and then motor-driven.

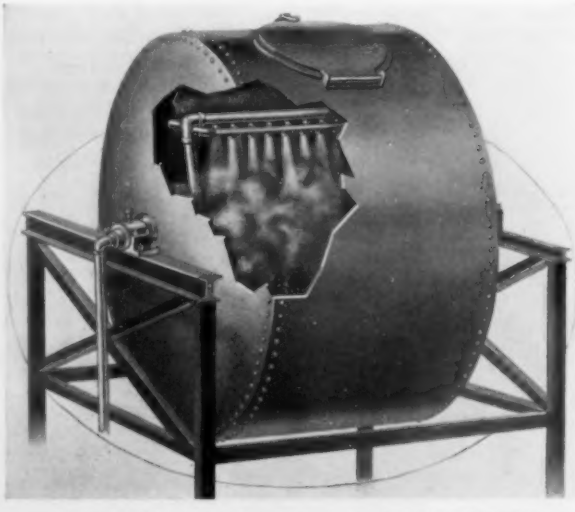
The field of the one-man grader is broadening out as road builders, contractors, state, county, town and city officials find greater uses for a machine of this type. The new unit has been especially developed for use, not only as a maintainer, but also for a variety of real road-building operations. It is durable and dependable and is proving its ability to handle the hardest jobs.

## A Pressure Mixer for Asphaltic Concrete

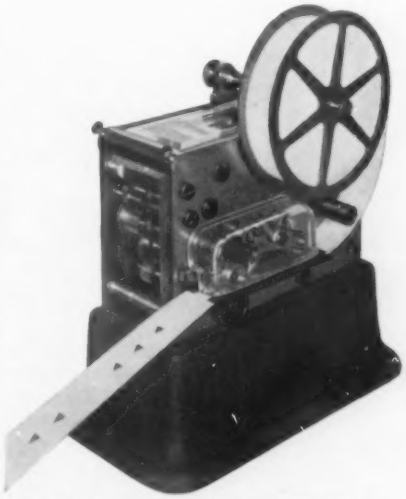
In an endeavor to improve on the old, well-known pug-mill for the preparation of topping and black base for asphalt pavements, the American Fin-Mix Co., 474 Wrigley Building, Chicago, has developed a rotary pressure mixer which has proved effective.

This mixer consists of an enclosed drum, the cover of which can be sealed. The drum has one hollow trunnion through which passes the pipe by which the liquid bitumen is brought into the mixer when it is closed. The drum is equipped with shelves which pick up the aggregate of rock and sand, raise it and permit it to cascade in the drum. This cascading material is sprayed with the liquid asphalt, which is brought through the trunnion and distributed through spray nozzles on a transverse pipe inside at the top of the drum. On one side of the drum is the sprocket gear and on the other side is the brake band.

It is reported that only 25 horsepower is required to run the 7½-ton mixer, and that approximately 15 horsepower is all that are necessary for a 5-ton mixer. The reason for so little power being required, according to the manufacturer, is that instead of forcing the blade through the mixture of rock and asphalt as with the ordinary type mixer, in the Finley rotary pressure mixer the material is simply lifted by the shelves in the drum for a short distance and allowed to cascade, thus exposing its surface to the liquid asphalt spray. After the asphalt has been added to the aggregate, the drum is subjected to an air pressure of 50 pounds, using the same pipe as that used for bringing in the asphalt. This air pressure is said to force the bitumen into the surface crevices of the material, thus insuring a complete bond between the asphalt and the treated aggregate.



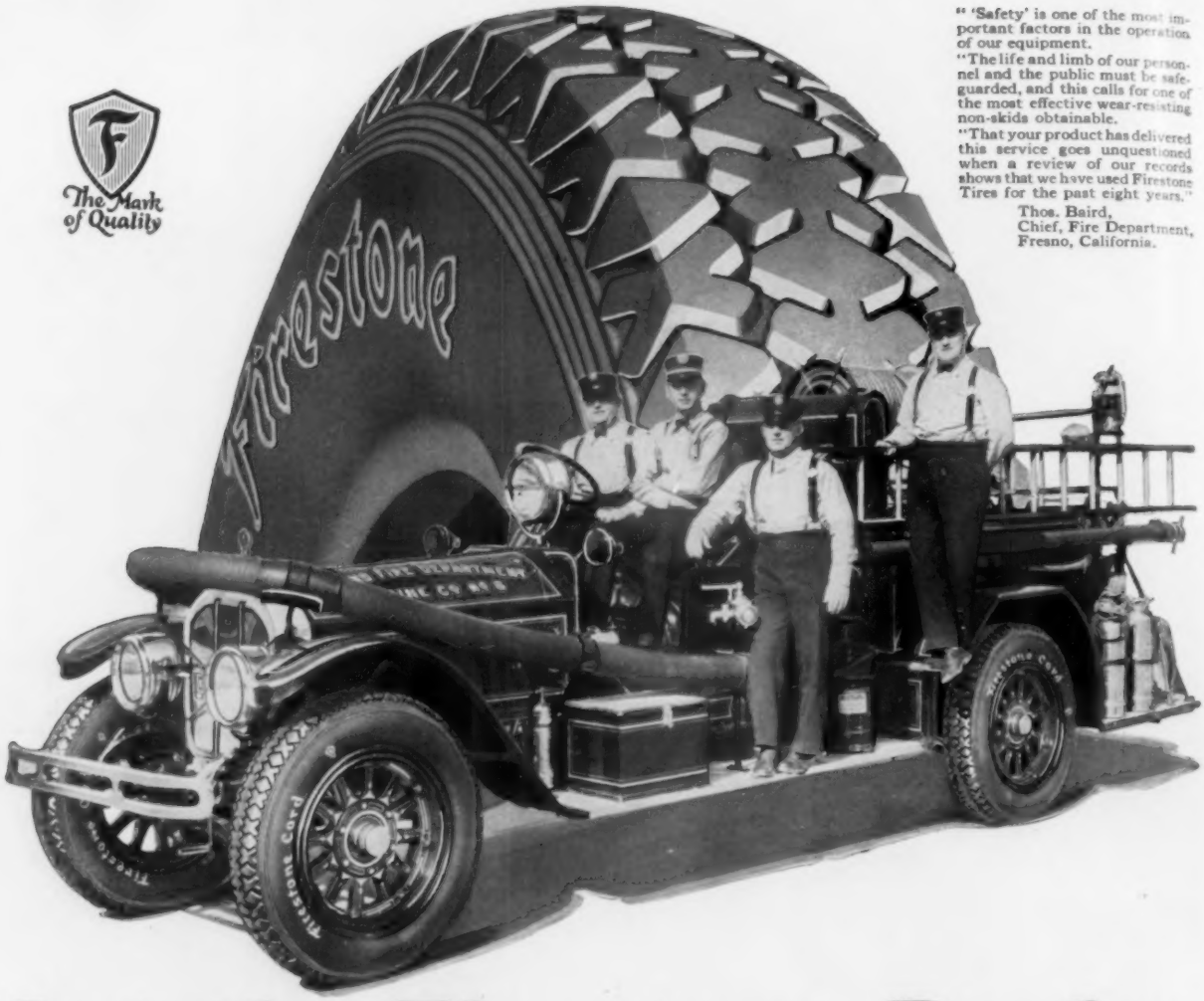
THE FINLEY ROTARY PRESSURE ASPHALT MIXER



THE GAMEWELL 1928 MODEL EXCELSIOR REGISTER

## A New Model Fire-Alarm Register

The 1928 Model Excelsior fire-alarm register which has been developed by the Gamewell Co., Newton Upper Falls, Mass., is built to deliver 1,000,000 blows, which is far more than the average register will be called upon to deliver in a lifetime. At a demonstration at the recent convention of the Pacific Coast and International Fire Chiefs Association at Portland, Ore., and also the International Association of Municipal Electricians at Salt Lake City, Utah, one of these registers was operated continuously for 120 hours, striking a total of 864,000 blows. Practically no signs of wear were visible at the close of the test.




"'Safety' is one of the most important factors in the operation of our equipment.
"The life and limb of our personnel and the public must be safeguarded, and this calls for one of the most effective wear-resisting non-skids obtainable.
"That your product has delivered this service goes unquestioned when a review of our records shows that we have used Firestone Tires for the past eight years."
Thos. Baird,
Chief, Fire Department,
Fresno, California.

The Mark of Quality

# Let the Firestone Dealer

## *Save You Money and Serve You Better*

Hundreds of Fire Departments throughout the country are taking advantage of the complete tire service that is being provided by Firestone Service Dealers. These dealers know tires, having learned the latest facts about tire construction and care at Firestone Tire Educational Meetings conducted by factory trained men all over the United States. They are experts in tire repairing, many of them having attended the Firestone Repair Schools held at the factory and in many principal cities. This is a big advantage to the Fire Department when dependable tire repairs are needed without delay.

The Firestone Dealer is trained and equipped to provide this new and better kind of tire service. He is able to supply Firestone Gum-Dipped Tires—the tires that are famous everywhere for their safe, non-skid tread and their easy-riding, long-wearing Gum-Dipped carcass. Call on your local Firestone Dealer to explain his service plan, and demonstrate to you why Firestone Tires will serve you better.

MOST MILES PER DOLLAR

# Firestone

## GUM-DIPPED TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER . . Harvey S. Firestone

Yes—we should like you to mention THE AMERICAN CITY.

This new recording mechanism punctures the signals on the paper tape, folding the puncturing back clear of the hole instead of punching out the signals. The operation involves only one-quarter the shock attached to the punching operation of the old model, thus lengthening the life of the most vital part of the register. Actual tests have shown that the new register can operate at a speed in excess of ten blows per second.

A molded polished glass cover fits over the new recording mechanism, protecting it from dust and at the same time permitting a clear view of the mechanism.

The triangular signal holes point in the direction the signal is traveling, allowing the signals to be read properly even though the tape has been detached from the register.

## A Snow Loader with a New Gathering Device

A new mechanical gathering device features the Joy snow loader developed by the Joy Manufacturing Co., Franklin, Pa. This snow loader is a result of extensive study and development and has as its background the well-known Joy coal-loading device, which is used in ten states for the underground loading of coal.

JOY SNOW LOADER, SHOWING METHOD OF MOVING SNOW TO THE CONVEYOR

The snow loader consists of two main units, one of which is a steel chassis mounted on solid rubber-tired wheels, carrying a Hercules Model G 4-cylinder gasoline power unit, operated at six speeds forward and two speeds reverse, with forward speeds ranging from 74 feet per minute to 12 miles per hour. The second unit is the steel conveyor frame which is mounted on the chassis at adjustable angles for operation and for low clearance when traveling, carrying the Joy patented gathering mechanism consisting of two powerful rotating arms which sweep the snow into the conveyor delivering to trucks through a swinging chute.

This snow loader has capacities for any character of snow and will load from 10 to 20 cubic yards per minute. The hydraulic jacks which support the steel conveyor automatically adjust themselves to any unevenness in the road. The weight of the apron is carried on the road surface, giving a powerful cleaning unit. Slip clutches on the gathering arms protect the arms from damage by curbs. The apron is 7 feet wide and the arms reach 4 inches on either side of the apron, operating at 40 revolutions per minute for each arm, thus breaking up the snow and facilitating its loading.

## Changes in Pennsylvania Salt Mfg. Co. Organization

The Pennsylvania Salt Manufacturing Co., Widener Building, Philadelphia, Pa., has announced that N. Emory Bartlett, who has been with the company since 1893, has been elected a Vice-President and will also continue his duties as General Sales Agent. Y. F. Hardcastle, who has been connected with the Wyandotte plant since January, 1910, has also been elected a Vice-President and will have charge of the manufacture of the chlorine products at the present plant at Wyandotte and Menominee, Mich., and will also superintendent the construction of the new plant at Tacoma, Wash.

THE NEW BAY CITY OVERSIZE BUCKET FOR SNOW HANDLING

## A Special Snow Scoop

A special oversize bucket of a shape particularly suited for handling snow in city streets along curbs or gutters has been developed by the Bay City Dredge Works, Bay City, Mich. The face of the bucket is 42 inches wide at the lips, tapering to 41 inches at the bottom, so as to insure easy dumping of the packed snow. The capacity is 1 cubic yard, and as the Bay City tractor shovel has an operating speed of four to five trips a minute, depending upon local conditions, this machine can be expected to load a 5-cubic-yard motor truck in about two minutes, depending upon the depth of the snow and whether or not a full bucket is secured every trip.

Practically every city has a snow-loading problem after heavy storms, and while equipment of the plow or scraper type can be used to advantage on open highways, the snow which accumulates along the curb on city streets after the merchants have cleaned their sidewalks and the street cars have cleared the tracks, all has to be loaded and hauled away. The Bay City snow-bucket can be furnished as an extra bucket to be attached to any standard Bay City tractor shovel, and the bucket can be put on in less than an hour.

A MASSACHUSETTS STATE HIGHWAY MAINTENANCE GANG PREPARING COLD PATCH, USING A JAEGER MIXER, FORD DUMP TRUCK WITH HAND HOIST AND INDEPENDENT COLD PATCH

# POWER

POWER is the mover of goods—the very source of transportation, the essential permanent servant of commerce.

In the new line of Graham Brothers Trucks and Commercial Cars power is the perfect servant—sure, smooth, irresistible, elastic in its capabilities, instantly responsive to your bidding.

The engines—4-cylinder and 6-cylinder—produce abundant power economically. Then the experienced care that goes into the design, selection of materials and erection of chassis assures the use of the maximum of this power in the actual movement of the truck.

Sizes range from ½-Ton to 2-Ton. Bodies are built to fit your business. Prices are extremely low. Service is available from Dodge Brothers Dealers—always and everywhere.

More than 60,000 units go into service yearly. Each adds to the tremendous store of evidence of the money-making power of Graham Brothers Trucks and Commercial Cars.

## *Prices*

2-TON - - - - - - - $1595
6-Cylinder engine, 4-speed transmission, 4-Wheel brakes (Lockheed Hydraulic).

1½-TON - - - - - - - $1245
4-Cylinder engine, 4-speed transmission, 4-Wheel brakes (Lockheed Hydraulic).

1-TON (G-BOY) - - - - $895

¾-TON - - - - - - - $670

2-TON DUMP TRUCK - - $1645
6-Cylinder engine, 4-speed transmission
4-Wheel brakes (Lockheed Hydraulic).
(*Chassis Prices f. o. b. Detroit*)

½-TON PANEL DELIVERY CAR - - - $770
(*Complete with body, f. o. b. Detroit*)

# GRAHAM BROTHERS TRUCKS

Sold and Serviced by Dodge Brothers Dealers Everywhere

Built by Truck Division of Dodge Brothers, Inc.